58 Don't Miss The Greatest Florida Citrus Exposition In History

Winter Haven

B369

March 7-14

Representative of Every Interest

The Citrus
Industry

Representing No Special Interest

... The ...
Florida Citrus Exposition
Winter Haven,
March 7 Thru 14

Occurrence, Distribution and Control of Fuller's Rose Beetle In Florida Citrus Groves

The Little Stroke . . .

Possible Use of Citrus
Fruit In Its Prevention

Citrus Tree Movement Down

The Citrus Industry
Celebrates Its 40th Anniversary This Year

Damage To Citrus By Fluorine Air Pollution In Central Florida

Four Years Of Experiments With New Miticides And Insecticides

The Mysterous Role Of Potassium in Plant Growth And Citrus Fertilizer Products

**Exposition Highlights** 

PETER LIND HAYES AND MARY HEALY
To Highlight Florida Citrus Exposition

Single Copy \_\_\_\_\_\_\_ 15 Cents
Subscription:
\$1.00 Per Year In Continental U. S.
\$2.00 Per Year Outside

Meet the men who serve you at

# Men who serve you at



G. D. SLOAN President Tampa



J. S. WOOD Sect.-Treas. Tampa



H. A. THULLBERY Sales Manager Lake Wales



A. WATKINS Proluction Mgr. Tampa



W. T. LONG Horticulturist Fort Pierce



W. J. LINDLEY Plant Manager Fort Pierce



C. R. STEARNS, JR. Entomologist Lake Alfred



C. S. LITTLE Tampa



G. F. MARRS Wauchula



G. W. THOMPSON Winter Haven



A. S. WINGFIELD, JR Fort Pierce



C. H. NORTON Fort Pierce

SUPERIOR is a unique
Service Organization for
Florida Agriculture
which manufactures the
finest fertilizers and insecticides science and experience have taught us
to make.

We invite you to meet our outstanding team of men with "Know-How."

Learn how "Know-How" and SUPERIOR products can team up to solve your plant food and pesticide control problems.



J. LEROY FORTNER Sarasota



B. F. DIXON Okeechobee

IT PAYS TO BUY
FROM FOLKS
WITH "KNOW-HOW"



TAMPA - P.O. Box 1021, Ph. 4-4131 - FORT PIERCE - P.O. Box 246, Ph. HOward 1-229

March,

Γh

Now friend of a stroke In the inclined brain a this dis studies brain about of cepts

Arterios viewed particul and mo changes blood v and ca cumulat laries

fragile younger

Dr. V of Med Minneso much a consider monest over the a person

by doze in the lished in Medical

a numb he has X



Publication office at Bartow, Florida. Entered as second class matter February 16, 1920, at the post office at Tampa, Florida, under act of March 3, 1879. Entered as second class matter June 19, 1938, at the post office at Bartow, Florida, under act of March 3, 1879.

# The Little Stroke Possible Use of Citrus Fruit In Its Prevention . . .

BY BENJAMIN McCONNELL, M. D., AND BORIS SOKOLOFF, M. D. Ph D.,

Southern Bio-Research Institute, Florida Southern College of little stroke might be very mild of little stroke, this time much more

Now and then, one learns that a friend or acquaintance has died from a stroke, or, as we call it, apoplexy. In the past, medical scientists were inclined to consider sclerosis of the brain arteries as the chief cause of this disease. But recent pathologic studies on the factors involved in brain vascular diseases brought about certain revisions of the concepts on this medical problem. Arteriosclerosis of the brain is now viewed as of a lesser significance, particularly in "little stroke." More and more attention is given to the changes which occur in the small blood vessels of the brain: arterioles and capillaries. For there is accumulating evidence that the capillaries in older people are more fragile and easily breakable than in younger men and women.

### LITTLE STROKE

Dr. Walter C. Alvarez, Professor of Medicine at the University of Minnesota and Mayo Clinics gave much attention to little stroke. He considers it as one of the commonest diseases of man in which, over the course of 10 or 20 years, a person is gradually pulled down by dozens or scores of hemorrhages in the brain. In his article published in the Journal of the American Medical Association (1) he gives a number of interesting cases which

indeed. In fact so mild that the patient fails to consult his physician. "Recently," Dr. Alvarez writes, "I saw a 65-year-old physician . . who was slowing down both mentally and physically. I spoke to his wife, who said that the trouble had begun one day when, for 20 minutes, her husband had been confused and unable to talk. Since then, he, who had always been so kind and good, had been unreasonable and irascible." Irritability and mental decline might be the only symptom of a mild stroke. Another incident of stroke might occur many months or years later, and usually is much more severe and dangerous.

The case of a College professor, whom one of us has observed, is typical in this respect. The professor, 66 years old, a man of dynamic personality, was powerful, physically and mentally. There was nothing wrong with him six years ago when after he finished his lecture, he experienced a strange sensation. One of his arms became numb and he was unable to talk. This sensation was very brief, hardly fifteen minutes. He regained his speech and the movements of his arm. For the next three years, he continued to live energetically, writing, traveling and lecturing as before. Three he has observed. The first incident years ago, he had another incident

severe. For two weeks, he was in a hospital with his left side paralyzed, and his speech affected. He recovered from the second stroke, a changed man, nervous, and easily tired, unable to concentrate his thoughts on any subject. A year ago, he had another incident of little stroke which left him unable to speak and to walk, with his mind seriously affected.

The case of President Franklin D. Roosevelt might be given as a classic example of little stroke. During the last eight years of his life, he had six incidents of little stroke. each time more serious, with the last being fatal to him.

Dr. Alvarez estimates that there are about one million or more persons in this country alone who are affected with this condition. In some cases, man might remain free from all symptoms for eight or more years after the first mild incident of little stroke, while in other cases the strokes, of ever-increasing gravity, might occur one after another. in a short period of two or three years, ending almost always either in mental and physical disability or

Little stroke is a disease affecting mostly, but not exclusively older Yet many cases of middle people. (Continued on Page 7)

# For fruit that's SUNSHINE BRIGHT...

Eliminate time-consuming sulfur applications in your post-bloom sprays...and get long-lasting protection against rust mites with Dithane Z-78. This time-proved zineb protects your groves until summer scalicide is needed. Dithane Z-78 has good persistence even in rainy weather... is easy and mild on tender growth... does not alter soil ph... and gives you good control of russeting and greasy spot. See your dealer for Dithane Z-78 now... use it in your post-bloom or nutritional sprays.



Chemicals for Agriculture

ROHM & HAAS

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

DITHANE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

DITHANE Z-78



Blenn for citrus can make the difference between an average crop and an excellent one—between a fair year

and a really profitable one.

Blenn is made by Swift's exclusive Flo-Fusion process which fuses all the elements into free-flowing particles. The result is balanced feeding—the key to stronger, healthier groves and higher quality fruit. Properly fed groves stand cold weather better, too.

You'll find that the extra growth elements in Blenn actually raise soil fertility to the high-profit level. Blenn is produced here in Florida for our soils and weather conditions. Let Blenn help you get a higher return from your investment in your citrus crop.

### FREE GROWERS' ADVISORY SERVICE

Swift's Growers' Advisory Representatives are qualified by training and experience to assist you with your production problems. Contact the representative located near you. He will be glad to help you with your grove program at no charge.

### SWIFT'S GROWERS' ADVISORY REPRESENTATIVES . . .

Mr. R. V. Albritton 110 S. Pine St., Sebring Ph. EVergreen 54551

Mr. L. D. Alderman Box 36, Wimauma Ph. 472864 (Tampa)

Mr. W. P. Bass 2506 Center St., Orlando Ph. 5-8081

Mr. P. J. Driscoll Box 333, Clermont Ph. EXeter 4-5401

Mr. J. M. Fennell 3344 Nuna Ave. Tice, Ph. EDison 7-6681

Mr. G. B. Garrard 830 E. Stuart Ave., Bartow Ph. 2-7511

Mr. J. W. Gray 676 Avenue F, S.W. Winter Haven Ph. CYpress 3-5413 Mr. J. H. Hale 1021 Passo Anderra West Palm Beach Ph. TEmple 3-1855

Mr. C. C. Helms Box 922, Homestead 11865 SW 187th St. Perrine, Ph. CEdar 52920

Mr. Richard S. Pike Box 124, Vere Beach Ph. JOrdan 7-2375

Mr. P. M. Schall 115 S. Charleston Ave. Fort Meade, Ph. 4-4151

Mr. W. V. Webb 3607 Cerena St., Tampa Ph. 64-5043

Mr. E. L. Wood 1022 S.W. 4th Ave. Gainesville Ph. FRanklin 6-7064\*



AGRICULTURAL CHEMICAL DIVISION

Winter Haven



# The Citrus Industry Celebrates Its 40th Anniversary This Year...

Forty years ago in January 1920 The Citrus Industry published its first magazine and for the intervening period it has published at regular monthly intervals. This magazine which its publishers feel is truly representative of the industry, has continued without missing a single issue.

Throughout the entire period of its existence up to the time of his death on July first last year, S. L. Frisbie served as editor and manager of the magazine.

In the beginning Frank Kay Anderson was associated with Prisbie in the conduct of the magazine and for many years edited a popular feature in each issue of the magazine called "Impressions" dealing with incidents, individuals and various phases of Florida's great citrus industry.

Anderson sold his interest in the magazine to the Associated Publications Corp., in 1938, and since that time S. Lloyd Frisbie, one of the original stockholders in the company has been active in the firm. Since his father's passing S. Lloyd Frisbie has assumed the responsibilities of editing the magazine and became president of the corporation.

During its existence The Citrus Industry has witnessed and recorded a great many changes in the industry, affecting the cultural and production aspects of Florida's great citrus crop. It has witnessed the creation of various grower organizations, all the way through to the organization of The Florida Citrus Commission and The Florida Citrus Mutual, the greatest of all the large number of grower

groups in the industry's history.

It has watched the growers of this great industry combat various epidemics, withstand freezes and insect pests. It has seen Florida citrus growers combat almost non-existent prices and seen them prosper in good times, and as the publication has often said it has watched the members of Florida's citrus family overcome almost unsurmountable handicaps and always come out on top.

Under the direction of S. L. Frisbie the magazine has always unalterably lived up to its slogan of being "Representative of Every Interest, and Representative of No Special Interest." It's founders felt that the growen deserved honest and unprejudiced representation, and through The Citrus Industry Mr. Frisbie endeavored to give them just such a

publication . . . The present personnel will continue to do their ut most to carry out to the letter the ideals of the magazine's founder.

As someone has said "Life Be gins at 40," so we feel that while on the calendar our 40 years of publication represents a considerable period of time, we also feel that our span of existence bids fair to add at least another 40 years of

effective service to Florida's greatest industry

We realize that without the constant and loyal support of Florida's citrus growers, who are our readers, and the cooperative assistance of Florida Citrus Experiment Stations the USDA., the College of Agriculture, and other state and federal organizations, whose functions include the betterment of the citruindustry we could not have progressed so well



aged are man vict the the be.

of or s
T
little
and
prof

such

bosi are esse char vess arte whice

deal

whe nutr thes as p juri great stand orida istent imes, t has famandi-

e the up to Every

al In-

wers

esen-

Mr.

ch a

per-

ir ut

r the

nder.

e Be-

while

rs of

sider-

feel

s fair

rs of

istry.

and

who

ssist

tions

and

vhose

eitru

well







Dr. Benjamin McConnell

### THE LITTLE STROKE

(Continued from Page 3)

aged men, who have had little stroke, are recorded. Occasionally, even a man in his late thirties might be a victim of little stroke. However, the older a man is, the more serious the incident of little stroke might be. Little stroke can occur in a man with normal blood pressure, and in such a case, the prognosis is always more favorable. But in most cases of little stroke, there is moderate or severe hypertension.

There is no specific treatment for little stroke, except rest, light diet and complete retirement from any professional activity, if man can afford and is willing to do so.

### PHYSIOLOGY OF THE BRAIN

The public at large knows a good deal about the heart, large blood vessels, blood pressure or thrombosis. Yet very few among them are cognizant of the fact that the essential business of body fluid exchange takes place in the small blood vessels known as capillaries. The arteries serve only as pipes through which nutritive substances and oxygen are brought to the capillaries, where the actual distribution of the nutritive material is carried on by these tiny vessels. They function as protective "sieves" preventing injurious substances from penetrating into the tissues and cells of our body. Once the capillary system is affected, some toxic conditions or ailments might appear. The mechanism of these tiny vessels is very complicated, in fact so complicated, that only scientists who study them have a clear picture of how the capillaries work. Gradually, it became evident that the capillary system is very easily harmed and disturbed by many factors. Bacterial and viral infections, almost all of them, cause injury to the capillary system. An inflammation itself is always associated with considerable injury to the capillaries. In fact, as Dr. Menkin (2) pointed out, any inflammation is actually the result of a grave injury to the capillaries. Once injured, the capillary breaks down and capillary bleeding is pre-

The blood vessel system of the brain has certain peculiarities which make its capillary system of utmost importance. As Magoun (3) emphasized, there is in the brain no effective channels of circulation (collateral circulation) between the various terminal arteries. The absence of such circulation is compensated in the brain tissue by an extensive capillary network. Wolff (4) and other physiologists estimate that one cubic millimeter of brain has between 1,000 and 1,100 micra of capillaries. The gray matter is richer in capillaries than the white

matter. The parts of the brain which have the greatest nerve sufface areas have the largest number of capillaries. This means that the parts of the brain which are actually involved in the mental activity of man, contain the optimal number of capillaries. And any injury to the capillary system of the brain, might cause its disturbance and might affect man's mind.

### CAPILLARY BLEEDING AS THE FACTOR IN LITTLE STROKE

At the conference on Cerebral Vascular Diseases, held under the auspices of the American Heart Association in Princeton, the problem of brain hemorrhage was discussed extensively (5). Dr. David Barr, Professor of Medicine, Cornell University stressed the fact that in the majority of brain vascular injuries (brain infarcts) there was no discoverable occlusion, as it was assumed before (6). Many investigators (Westfall and Barr (7), Stern, (8), and Scheinker (9) ) expressed the belief that brain hemorrhage results from bleeding or injured capillaries or arterioles of the brain tissue. Paterson (10) who conducted extensive postmortem investigations of persons who died from a stroke, concluded that brain hemorrhages "result not from backflow of blood through defects produced by rupture of atheromatous abscesses,

(Continued on Page 41)

# Hoe 4 trees a minute... Case 300 Tractor with Pounds Grove-Hoe Grove-Hoe

The new revolutionary Pounds Grove-Hoe tills and fertilizes 4 trees a minute. Owners report

The tilling rotor works the ground thoroughly for good aeration and moisture intake. Rotor can be set to till as shallow as ½ inch near the root crowns... as deep as 4 inches away from the tree. Tractor creeper gear permits excellent work even in Bermuda. Constant PTO allows stationary working of humps of grass, leaving land practically level.

F

ir

H

si

th

tai

siu ple ly

of the

do

lea for wa

me ash

fro chi Re

Fertilizer applied ahead of the rotor is thoroughly worked into the soil. Rate of application is ½ to 6 pounds per tree. Automatic control shuts off fertilizer when you raise the hoe for transport. Get full information from the manufacturer or any of the J. I. Case dealers listed below.

Manufactured and Sold by:

### POUNDS MOTOR CO.

Sold by:

### POUNDS TRACTOR CO.

WINTER HAVEN, FLORIDA AVON PARK, FLORIDA

POUNDS INDUSTRIAL GAS CO.,
WINTER GARDEN, FLORIDA

POUNDS AGRICULTURAL GAS CO.,

LP-Gas for Tractors & Industrial Uses



**CUT LABOR COSTS 80%** 

With the NEW

### **POUNDS TREE BANKER**

BANKS 2 TO 4 TREES A MINUTE INTERCHANGEABLE WITH THE HOE

# Call Now For A Free Demonstration No Obligation, Of Course!

SEE US AT THE CITRUS EXPOSITION IN WINTER HAVEN!

in

lv

to

# The Mysterous Role Of Potassium In Plant Growth And Citrus Fertilizer Practices

. . . BY . . .

Potassium was used in the form of wood ashes, salt peter, farm manures, seaweeds and other materials as soil amendments long before the beginning of the fertilizer industry. For centuries, the liquid (leachings of wood ashes) was evaporated in iron pots for commercial purposes. Hence the name potash. The word potash is a term designation for potassium oxide.

The early potash fertilizers consisted of crude salts from German mines, consisting largely of mixed chlorides and sulphates. As the fertilizer and mining industries grew, these salts were mined, refined and sold as muriate and sulphate of potash. They now constitute the major industry, although nitrates and byproducts of potash from industries constitute sizeable amounts.

Potassium is an abundant element comprising about 2½ percent of the earth's crust. It is an active base occurring in nature only in combination with other elements largely as complex silicates. Some feldspars, micas and related minerals are high in this element. Records show that the residual soil, especially clay, resulting from the weathering of rocks and minerals, contain a high content of potassium.

This is well illustrated by the fact that some loams and clay soils contain as much as 5 percent potassium, whereas sands rarely contain .1 percent. A portion of the soil potassium is insoluble in the form of complex silicates, and a portion is loosely held in replaceable potash most of which is available to plants. Although potassium and sodium are closely related chemically, sodium does not have a strong affinity for the soil particles and does not resist leaching. This seems to account for the high sodium content of sea water compared to potassium.

The role of potassium (hereafter mentioned in this discussion as potash) in plant growth is different from that of other nutrients. Its chief function seems to be catalytic. Records of long standing show that

DR. O. C. BRYAN\*

plants absorb more potash than any other mineral nutrient; yet, it does not become a part of the plant products such as protein, starch and cellulose. Its essentiality has been established for decades, but its functions are still somewhat obscure. In the growing plant it seems to be essential for the synthesis of amino acids, starches and other products, as well as a regulator for the intake of nitrogen.

And it aids in maintaining general health of plants and rigidity of cells. But its role is still a puzzle to technicians. The fact that young plants absorb large amounts of potash—greater than any other mineral—without becoming a part of the plant products, is a strange phenomena in nature. This is further complicated by the reduction of this nutrient in the plant with age, and that live plant tissue resists leaching more than dead tissue.

All potash fertilizers are water soluble and easily absorbed by growing plants, even to the extent of luxury consumption when ample amounts are present. This luxury consumption has been erroneously used in practice.

Records show that most fruit trees and broad leaf plants, including legumes, need more potash than grasses. This seems to be inherent with the plants. The fact that fruits, particularly citrus, contain 10 to 20 times more potash than calcium, yet mature leaves contain more calcium than potash, is a strange phenomena in nature, especially since potash is not an integral part of the fruit products.

Since fruit quality has always been a primary objective of growers, all quality producing factors have been given priority, including emphasis on high ratios of potash in the fertilizer. For many decades the assumption that potash induced cold resistance in citrus was so strongly en-trenched in the minds of Florida growers and technical workers, that logic, reason and experimental records were practically ignored. This is difficult to explain in the light of Collison's work in which a 5-3-3 was as good as a 5-9-9 (nitrogen, phosphoric Acid and potash, respectively) in Bulletin 154, Florida Experiment Station, 1919.

The emphases on quality and cold resistance nullified experimental records. Furthermore, Florida citrus were grown on humid sands from which potash was supposed to leach readily. These assumptions created a demand for 2 to 3 times as much potash as nitrogen in the orthodox citrus fertilizer such as 3-3-8, 4-6-8, and 4-8-8. These grades prevailed many years after (until 1952) experimental records discredited them. (1.2)

Large and coarse fruit could hardly be attributed to high levels of potash in the fertilizer. Emphasis on potash for fruit quality overshadowed all records. This was well illustrated during the 30's when fruit prices were low and economy was mandatory. At that time many growers were forced to curtail fertilizer poundage, including potash, but with considerable reservation, on the assumption that they were sacrificing fruit quality.

When the low levels of potash failed to point up a definite reduction in fruit quality the observations were set aside as doubtful. (2) With the return of better fruit prices, the high levels of potash were resumed for the orthodox fertilizer mixtures, overlooking widespread observations and research findings.

\*TECHNICAL DIRECTOR, SOIL SCIENCE FOUNDATION LAKELAND, FLORIDA But it should be pointed out that some growers and organizations continued to use unorthodox mixtures such as 8-0-8 and 8-0-12. Although these were limited, they were sufficiently consistent to establish definate trends away from the orthodox 4-8-8 mixtures as early as the late 30's. The citrus industry is deeply indebted to these unorthodox practices which motivated further research and better understanding of potash needs.

Potash fertilization was an unsettled problem when the Short Research Grove was established in 1939. Consequently, this item was given careful attention by the Advisory Committee, and variations ranging from 0 to 12% potash in the fertilizer mixtures were included in the study. Systematic and consistent records seem to be necessary to clairtfy the confusion regarding the effects of potash on the production and quality of citrus fruit. The records have been carefully evaluated annually. Although they have been contrary to tradition, they have been consistent.

Strange as it may appear, the extremely low levels of potash, approximately 1/2 that of nitrogen on Lakeland sand, have not greatly hindered production. The chief difference has been in a reduction of fruit size, but not number. The actual number of fruit appears to be greater with low levels of potash. Since ample amounts of trace elements, calcium, magnesium, nitrogen and phosphorus were applied in a systematic manner to all the plots, the fruit differences can be safely assigned to the potash influence. The high levels of potash (more than that of nitrogen) produced larger and coarser fruit than the lower levels (including potash only as impurities) without visible symptoms of potash deficiency in the foliage. This has been the trend for 16 years without much decline in production.

It is evident that the trees absorb potash from the soil since the impurities in the fertilizer were less than that removed in the fruit. These records were contrary to expections for Lakeland sand. But further study revealed that the subsoil layers contained more total potash than had hitherto been considered; and that the trees had been utilizing potash commonly referred to as unavailable.

One of the strange observations in this study has been that the foliage on trees receiving insufficient potash to produce normal size fruit has not shown distinct potash deficiency symptoms, and that very low levels of potash do not hinder trees from setting fruit. The sodium in the fertilizer may have supplemented the effects of potash in this case. The fact that no significant differences in fruit size and yield have developed on trees which received two-thirds as much potash as nitrogen compared to trees receiving one-third more, and twice as much potash as nitrogen over a number of years is somewhat of a mystery.

Furthermore, the fact that twice as much potash as nitrogen hinders fruit quality adds to this mystery. These records have been so widely confirmed by grower practices and research findings (3), (5), (6), that a nitrogen-potash ratio approximating 1 to 1 has been accepted as the orthodox fertilizer for citrus. It is hard to believe that leaders and scientists could have been mislead in the interpretation of experimental data for more than a quarter of a century. But such seems to have been the way of progress.

Another observation regarding the records in the Short Research Grove is contrary to tradition: The trees receiving high rates of potash seem less cold resistant than trees receiving low rates. The reason for this is unknown. Furthermore, trees with very low levels of potash seem to have less rust mite and greasy spot than trees receiving high potash rates. Whether or not this has any connection with cold resistance is yet to be determined.

Strange as it may appear, more than 25 years were spent debating between theories and experimental records, before the orthodox fertilizer grade of a 1 to 2 (4-8-8) nitrogen-potash ratio could be changed to a 1 to 1 (8-0 8) ratio for citrus. This new grade is more efficient and more scientific than the old one for sandy soils. A careful evaluation of the known information including potash in the subsoil may justify a nitrogen-potash ratio of 1 to .6 or .7. Current practices are pointing in that direction.

In the light of present knowledge,

had this nitrogen-potash ratio of 1 to 1 been the orthodox citrus fertilizer during the twenties and thirties, the widespread problem of citrus bronze - a magnesium deficiency - would have been less severe, and possibly avoided entirely in places. But such is the way of science and progress.

Although the role of potash in the growth of plants and the production of citrus has not been solved, growers have a more solid and scientific foundation regarding its use than ever before. Sound interpretation of research findings often mingled with tradition and theory is a necessary part of the scientific method in agriculture. The many years spent crystallizing a new fertilizer grade, though expensive, have been worthwhile. It is logical to assume that proper interpretation of additional facts will justify modifying this new grade.

#### References

- 1. Ruprecht, R. W. The Effect of Varying Amounts of Potash on the Composition, Yield and Quality of Citrus. Fla. Agr. Exp. Station Annual Reports 1926 to 1938 (Project 22).
- 2. Bryan, O. C. The Effect of Nitrogen-Potash Ratio on Citrus. Florida Grower, Feb. 1935.
- 3. Reuther, W. and Smith, Paul. Relation of Fertilizer Treatment on Fruit Quality of Valencia Oranges. Florida State Hort. Society Proc. for 1951, page 29.
- 4. Bryan, O. C. Bulletin No. 1 Soil Science Foundation, 1951, pages 6-11.
- 5. Sites, J. W. and Deszyck, E. J. Effect of Varying Amounts of Potash on Yield and Quality of Valencia and Hamlin Oranges. Fla. State Hort. Soc. Proc. 1952, page 92.
- 6. Reitz, K. J., et al. Bulletin 536, Fla. Agr. Exp. Station, January 1954, pages 11-13.

The poor practice of planting the same crops on the same land year after year may mean the difference between good and poor yields.

SOUTHERN DOLOMITE PALMETTO, FLORIDA PHONE: BRADENTON 2-14-11

9

d s.

n c n n d - d s r n e - g

t

y

f s.

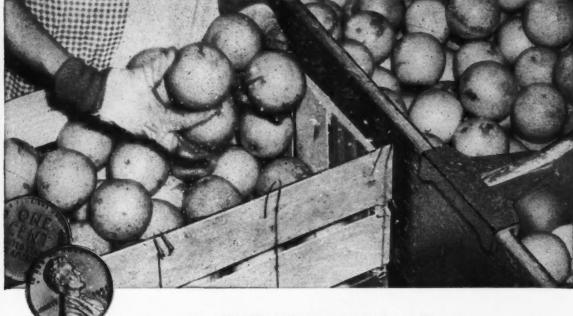
1

r. a e

n

y

ır



It isn't <u>HOW LITTLE</u> a fertilizer costs that counts, but <u>HOW MUCH</u> it does

# FEED YOUR TREES ARMOUR CITRUS FERTILIZERS

These Armour field men are ready to offer you the finest in fertilizer quality and service:

Mr. R. V. Barber P.O. Box 6 Palmetto, Florida Phone: 6-2503

Mr. W. W. Beckett P.O. Box 7701 Orlando, Florida Phone: Garden 3-9890

Mr. J. F. Cochran 820 N.E. 12th Ave. Pompano Beach, Florida P.O. Box 1121 Phone: WEbster 3-1660

Mr. L. L. Eaddy 322 Palm Circle Lake City, Florida P.O. Box 285 Phone: 3206 Mr. L.W. Jones P.O. Box 774 Lake Wales, Florida Phone: 3-3124

Mr. D. R. Kemper P.O. Box 158 Clermont, Florida Phone: EX 4-2513

Mr. D. C. McCormick P.O. Box 1549 Fort Myers, Florida Phone: MO 3-2046

Mr. H. W. Philpot 1918 Blackburn Ave. Tallahassee, Florida P.O. Box 413 Phone: 3-2101 Mr. R. E. Pinner P.O. Box 561 Bartow, Florida Phone: 3-0192

Mr. W. A. Scarbrough 4877 Ormewood Court Jacksonville, Florida P.O. Box 599 Phone: FL 9-6256

Mr. J. E. Scott 668 Antiqua Lane "Whispering Palms" Vero Beach, Florida P.O. Box 1957 Phone: JOrdan 7-2263 Mr. J. B. Smith P.O. Box 306 Newberry, Florida Phone: 4771

Mr. W. S. Williams 435 North Kentucky DeLand, Florida P.O. Box 542 Phone: RE 4-1316

Mr. M. F. Zellner P.O. Box 407 Floral City, Florida Phone: Park 6-2085

George C. Butler, Jr. 8430 S. W. 122nd St. Miami, Florida Phone: CEdar 5-4067

ARMOUR FERTILIZER WORKS, DAVENPORT, FLORIDA

# Damage To Citrus By Fluorine Air Pollution In Central Florida

In the spring and summer of 1949 a number of groves North of Bartow began to show tip burning, excessive leaf drop, and a chlorosis in the foliage that was not common to Florida Citrus. Close observations of these conditions indicated that the trees were reacting to a severe toxic element coming from some source.

A search of the literature on Florida Citrus did not shed any new light on the problem. On several groves nutritional elements in the sprays and fertilizers over a period of a year were increased, but no favorable results were obtained. In one case it was thought that a boron deficiency was a cause of the problem. In one of the sprays in this grove, boron was added to one tank of spray but left out of the spray applied to the rest of the trees. This gave no results.

During this first year one of these groves was estimated to have lost 80% of its foliage and suffered a similar crop reduction.

The grove looked as if it were going to be destroyed in the spring of 1950. The spring growth came out and the tips of the leaves were fired or burned. All the leaves that burned on the tips soon dropped to the ground. It was noted that the open bloom in most cases fell off without shedding the petals.

Other groves East and North of this grove were showing similar results to growth and bloom, but did not show as severe damage. Several growers got together to talk about the problem. These growers had noticed foggy drifts of smoke coming from the South-West. A check of all groves in the immediate vicinity showed similar chlorolic leaf patterns that could not be identified. Inspection of the unimproved lands showed damage to moss, native brush and trees. On the South-West side of the 40 acre grove receiving the most damage, it was noted that old and young pine trees were dying. Pines within a few feet of the grove were dying.

Then it was noticed that a foggy, pale white, yellow smoke was coming from the new Triple-superphosphate plant only about seven-tenths of a mile away. This smoke had a strong acrid odor and smarted the nose and eyes.

This new triple-superphosphate

BY PAUL B. HUFF
CITRUS GROWER CONSULTANT
VICE-CHAIRMAN OF CITIZENS AIR
POLLUTION COMMITTEE

plant was the first of its kind to begin operations in Polk County. The company that operates this plant announced that it was first in operation in January 1949. Another such plant, and the second in Polk County, went into operation in March 1949. A check of the environs of the second plant to go into operation showed damage to vegetation around this plant.

The second plant went into operation at Agricola. Two citrus groves within three-fourths of a mile South-West of the Agricola plant were showing leaf tip burn, leaf drop and the peculiar chlorotic pattern on the leaves. These two groves had gone

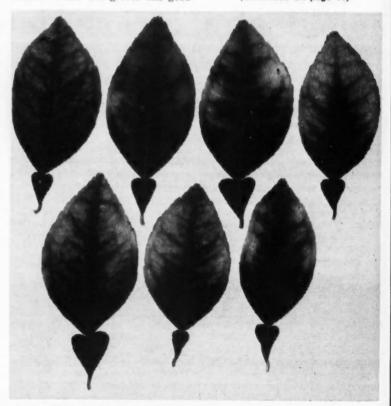
down fast according to the people working with them.

Now it was here decided that we growers had a problem that was new to us.

From the most severely damaged groves North of Bartow, we gathered a half pound of leaves and took them to our County Agricultural Agent, Mr. Paul Hayman. Mr. Hayman said he would have the leaves analyzed. Dr. I. W. Wander of the Citrus Experiment Station responded to the request for leaf analysis by coming down to look at the damaged groves. He took more leaves for testing. Dr. Wander found from his analysis that fluorine was present. He recovered enough fluorine from the leaf samples to etch glass.

Dr. A. F. Camp then inspected the badly damaged grove. After the grove inspection, it is reported, he went to the Manager of the new Triple-superphosphate plant West of

(Continued on page 14)



Grapefruit leaves showing cholorosis caused by fluorine. These leaves were collected in the Lakeland Highlands area and were photographed and identified by Dr. J. J. McBride of the Florida Citrus Experiment Station at Lake Alfred, Florida

ed ok al

ed by ed or m



# Granular, readily available, reliable magnesium source — Sur Porting

Mixed fertilizers which contain Sul-Po-Mag pay big dividends in vigorous groves, bigger yields, better fruit Citrus groves need magnesium . . . and they need it regularly . . . maintained at proper levels. But simply replacing magnesium isn't enough. It's important that the magnesium you add is the kind that becomes readily available so that trees can utilize it when needed.

That's why granular, water-soluble Sul-Po-Mag is just right for citrus trees and citrus soils. It provides quickly available magnesium and sulphate of potash to feed trees fast . . . and all season long. The result is vigorous trees, sustained fruit development, top yields, increased profits.

Your dealer or fertilizer man can provide mixed fertilizers with Sul-Po-Mag. Use Sul-Po-Mag this year . . . see why it's your best insurance for top citrus yields.



Quality fertilizer containing a combination of readily available magnesium and sulphate of potash obtained from Sul-Po-Mag



Creators of Living Minerals

	NATIONAL MINERALS & CHEM. CORP.
Potast	Div., Dept. CI-15, Skokie, III.
Please which	send me a free copy of your "Magnesium Booklet discusses magnesium and Sul-Po-Mag for specific crop
Name	

POTASH DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center: Skokie, Illinois

### DAMAGE TO CITRUS BY FLUORINE AIR POLLU-TION IN CENTRAL FLA.

(Continued from page 12)

Bartow and discussed the problems of the grove damage with him. Dr. Camp is reported to have learned that the plant had plans for putting in scrubbers to control fumes escaping.

April 1950 was about the first date that the problem was called to the attention of our local and state Agricultural authorities. Without the benefit of extra monies, our County Agent and Dr. Camp's Experiment Station Staff have given us much help and research.

Between April 1950 and 1955, the phosphate mining and triplesuperphosphate plant building continued very rapidly to expand. New grinding mills were added and expanded in the area around Bartow and Mulberry. As each new plant opened up and went into operation, the people of this area noticed the native vegetation begin to die back. The citrus growers noted that leaves turned pale on their groves and trees got thinner. Fruit crops were lighter and profits were shorter. Cattlemen found their cows were getting hurt also.

The cattlemen noticed that calves were born too early, and often dead. The best and oldest established herds in Polk County in the phosphate area in the past had a reputation for producing good, early, big, heavy calf crops. Now it was noticed the cows were not producing healthy calves. The calves that survived were boney and of the poorest quality. The foundation cattle were thin. The steers did not get fat anymore. The teeth of the cattle were rotting away from Fluorossis, Dr. Geo. Davis and the local Vets told the cattle-

The cattle industry was in trouble and today our agricultural authorities estimate that the cattle population in the phosphate area of Western Polk County has been reduced by 45,000 head, because of air pollution by fluorides. The cattleman has lost his living, and his land is almost worthless for agricultural purposes. There are 45,000 less cattle on the Polk County Tax Rolls.

The truck farmer also has suffered his losses in crop failure due to air pollution. The experiment station workers have found as much as 400 P.P.M. of Fluorine in vegetables South-West of Mulberry. The farmers crops are stunted and burned by Fluorine fumes. What kind of health hazard is presented to those

who eat these vegetables or vegetables from their own backyard gardens?

People in the phosphate area are also concerned about their health. They are not now getting their share of healthy rain and sun washed air that Florida is noted for. The poison Fluorine in many active forms, now flows through the air everywhere in the phosphate area.

Early in the summer of 1955 most all of the mines and all of the triplesuper plants but one, went out of production because of a labor strike that lasted over three months. The phosphate area got a relief from the poisonous Fluor ne fumes. Citrus trees put out a healthy growth that looked better than any foliage produced in 4 to 6 years. Growers all around the area were beginning to see the improved change in their trees. The summer growth looked healthy and vigorous with no chlorosis except in the near vicinity of the plant still producing.

What is this element Fluorine that is capable of causing so much destruction? Fluorine is found in every ton of phosphate rock that is mined. Each ton of raw rock phosphate contains 60 pounds or more of (F) Fluorine. This Fluorine is not desirable in phosphate products such as triple-super, elemental phosporus and de-fluorinated phosphates. The fluorine is liberated when the raw phosphates are treated with heat and or acids. Fluorine itself, as a by-product, is not of much value at present. If the Fluorine escapes from these plants as a fume or in the wash water wastes, it leaves the phosphate products more pure and concentrated and therefore more valuable. It would cost millions of dollars to reduce the Fluorine fumes escaping down to the 1 or 2% level. This added cost of controlling air pollution would have to be added to the cost of operation and in the end to the cost of the phosphate products. This has not in the past seemed necessary or expedient by the phosphate operators.

Fluorine is one of the elements that makes up our earth. It has an atomic number of 9 and an atomic weight of 19. Fluorine is a pale yellow or yellow green gas that unites directly with silicon, carbon, hydrogen and nearly all other elements in the dark, (some elements only unite where there is light). Fluorine decomposes nearly all other compounds to form Fluorides. The element Fluorine and many fluorine compounds are dangerous poisons. Two parts per million or less in the

drinking waters of children causes mottled teeth.

Soen after the phosphate plants settled the strike and went back to work, early in the fall of 1955, the effects could again be observed in vegetation.

Under the direction of Dr. A. F. Camp, work went on at the experiment station by Dr. I. W. Wander and Dr. J. J. McBride to reproduce the damage to citrus away from the phosphate area so as to prove the cause. In the spring of 1955, a block of four year old Ruby Red Grapefruit trees was selected and set up as a test block. This block was located North of the Lake Alfred Citrus Station and over 19 miles from the nearest phosphate plant.

This experiment was set up so that every other row in the grove would receive treatment leaving a non-treated row between treated rows. The treatments used were applied on spring 1955 growth in seven sprays over a period of two months. About one liter per tree per spray was applied at each treatment. Sprays of aqueous hydrofluoric acid, fluosilicic acid and phosporic acid at 0.1 normal concentration was applied to the trees. At (Continued on page 16)

### Ideal Fertilizer Co.

2270 Park Ave. BARTOW, FLORIDA

> Phone CA 3-5151 Night CA 3-5428

SPECIAL FORMULA FERTILIZERS LIMING MATERIALS ADVISORY SERVICE SPREADING

"There Is No Substitute For Quality" e n

v of d is e 9 te ю re d n 0 e t-



### "Our ORTHO" Fieldman is as near as our phone"

say citrus grove caretakers Bruce Fullerton and Lincoln Walker of Lake Wales, Florida

"When trouble comes, our ORTHO Fieldman is as near as our phone. He checks our groves for infestations and gives us up-to-the-minute helpful information." They add, "ORTHO advice has always proven to be sound advice."

### **Leading Florida Citrus Growers acclaim ORTHO** Field Service and products. Here's why:

When you buy ORTHO products, all the personal, on-your-ground technical advice and services of your ORTHO Fieldman are provided gladly and without any extra charge. Too, with ORTHO, you're associated with the company that first developed highly refined petroleum oil sprays in the form of new type emulsions and ready-mixes. This scientific research and technical experience have made ORTHO Field Service and products the choice of Florida citrus growers for over 34 years.



### **Helping the World Grow Better**

California Spray-Chemical Corp. A subsidiary of California Chemical Co. P. O. Box 7067, Orlando, Florida

### Contact your nearest ORTHO Fieldman today:

Lake Alfred: J. S. Murphy, Jr. • Lakeland: Jean E. Mabry Orlando: Cliff Sutton •

Leesburg: Charles Ashley

Orlando: John Nowell • Plant City: Webster B. Carson •

Deland: Randall Williams

### DAMAGE TO CITRUS BY FLUORINE AIR POLLU-TION IN CENTRAL FLA.

(Continued from page 14)

the end of two months a chlorotic pattern appeared which was identical to that found on citrus leaves in the Lakeland-Highlands Area. The phosphoric acid spray did not develope or cause chloritic leaves to develope but the other two materials caused the chlorotic pattern to appear. It was also observed that the spring developing leaves were smaller than on the check plot.

Many growers visited and observed these plots also. The Experiment Station would make no comment or observations as to the effect on production on this experiment plot, but we growers could observe a big crop reduction on the trees that developed chlorotic leaves.

Work in the state of California by Dr. Brewer using citrus in green house controlled Fluorine fumigation experiments, also produced the typical chlorotic patterns that we get here in the phosphate areas. Dr. Brewer was here in the phosphate

get here in the phosphate areas. Dr. Brewer was here in the phosphate area during the past summer of 1958. He was surprised to find such a large percentage of leaves in the phosphate area showing such definite chlorotic pattern. Dr. Brewer says he found that in his experiments he could get reduced growth of twigs, foliage and crop reduction where no chlorotic leaf pattern on oranges was evident. Dr. Brewer also observed tip burning of citrus leaves in the area and that too was a surprise to him. He indicated that it would take very large

amounts of Fluorine to cause tip

burning of leaves.

It has been observed by most all growers of Grapefruit in the Lakeland-Highlands area that they have had no crops of early grapefruit to move in the past 7 or more years. Lakeland-Highlands for years has been noted for quality grapefruit production and many years back always came up with their share of the early movement of grapefruit. In the past seven years acid remains so high in grapefruit that most crops have not moved until after January 1st each year. Dr. Brewer's work in California shows that fluorine fumigated oranges had much higher acid than the control plots not fumigated with fluorine.

It has been estimated that more than 200,000 acres of citrus grove is being damaged to some degree in West Polk County. This damage has been estimated from small to as much as a 75 to 80% in crop production. Where you get crop reduction you also get reduction in vigor and appearance of trees.

This damage from Fluorine not only reduces profits in many cases, it has resulted in operational losses. The value of a grove property depends mainly on its ability to produce dollar profits. Therefore groves in the phosphate area have been devalued by Fluorine.

A number of growers have sold their groves at a loss during the last four years because the groves were so damaged by air pollution that they were no longer good citrus producing investments. One such grower sold his grove for \$890.00 per acre capital loss about three years ago. He felt he was lucky not to lose more on the grove.

Dr. I. W. Wander and Dr. J. J. McBride determined that Fluorine was the element causing chlorotic leaves to show up in the phosphate area. They found that citrus leaves run up as high as 370 P.P.M. of Fluorine. Using Spanish Moss as a testing media, they began at 400 yards from a triple-super plant to take moss samples. They proceeded from the plant and at intervals up to 20 miles, they continued to take (Continued on page 33)

### **CHLOROBENZILATE**

PROVIDES YOU

WITH THE VERY BEST

# POST BLOOM SPRAY

RECOMMENDED . . . .

By Your

CITRUS EXPERIMENT

STATION

### For Further Information Cr Delivery Contact

ROGER H. HALE Palmetto — Ph. 3-1491 MURRAY F. GAY, JR. Leesburg — Ph. STATE 7-5291

PAUL McCLANAHAN Orlando — Ph. 5-1998 NORMAN O. WARREN Winter Haven — Ph. CY 4-1656

OR

### Flag Sulphur And Chemical Co.

P. O. Pox 5737 — TAMPA 5, FLA. — Ph. 4-2177

# better fruit, better yields

when you protect gainst mites

with low-cost

Chlorobenzilate

SAFE . EFFECTIVE . RESIDUAL

Yes, get bigger yields, better fruit, and more profits. CHLOROBENZILATE stops mites. And due to its long residual action, CHLOROBENZILATE continues to protect! Here's real low-cost mite control for citrus crops.

CHLOROBENZILATE, developed by Geigy research laboratories, is easy to use, safebecause it is relatively non-toxic to man and animals, and does not affect bees under normal field conditions. It is compatible with most commonly used insecticides and fungicides. It may be used with spray oils and is non-irritating to skin.

CHLOROBENZILATE provides outstanding control of Citrus Bud Mite, Citrus Flat Mite, and Citrus Rust Mite. CHLOROBENZILATE is effective against all growth stages of mites and has strong ovicidal properties. It is valuable in controlling strains of mites resistant to organic phosphorus insecticides.

Ask your farm supply dealer for CHLOROBENZILATE today—for positive low-cost control of profit destroying mites. CHLOROBENZILATE is available as Geigy CHLOROBENZILATE 25W (a 25% wettable powder). Geigy CHLOROBENZILATE 25E (25% emulsifiable solution) is also recommended, for use on ornamentals and nursery stock.

SEQUESTRENE\* iron chelates are designed for correction of iron deficiency (chlorosis) in fruit trees, ornamentals, vegetables, and turf. They are completely water soluble, compatible with most commonly used pesticides, and may be applied as foliage sprays or as soil applications, alone or in combination with fertilizers.

 "SEQUESTRENE" is the brand name for chelating compounds sold by Geigy, Agricultural Chemicals, division of Geigy Chemical Corporation.



ORIGINATORS OF DDT INSECTICIDES

GEIGY AGRICULTURAL CHEMICALS

Division of Geigy Chemical Corporation

Saw Mill River Road . Ardsley, N. Y.



# Occurrence, Distribution and Control of Fuller's Rose Beetle In Florida

Citrus Groves . . . Florida Citrus Experiment Station, Lake Alfred

Presented At Annual Meeting of Florida State Horticultural Society, Clearwater, October, 1958

The Fuller's rose beetle, Pantomorus godmani (Crotch), is a well-known pest of roses. It feeds on a wide variety of wild and cultivated plants in many parts of the world. It is probably indigenous to South America, but has been reported in widely separated countries including Argentina, Australia, the Azores, Brazil, Canada, Chile, France, Hawaii, Italy, Mexico, Morocco, Paraguay, Spain, Sicily and the United States. In 1938, Quayle (1) reported that Fuller's rose beetle



Fig re 1. Adult Fuller's rose beetie, Pantomorus godmani (Crotch).

caused serious damage to avocados, citrus and walnuts in California. Dickson (2), also working in California, reported in 1950 that this beetle was one of the most serious pests in citrus nurseries.

In 1952, W. T. Long and H. J. Reitz (unpublished data) observed large numbers of Fuller's rose beetles and root injury in several citrus groves in Indian River and St. Lucie Counties. There are several hundred acres of citrus in these counties now infested with this beetle. In addition, damage by this beetle was a contributing factor to the present state of decline of a large acreage which is no longer heavily infested. Many of these groves were probably infested with high populations prior to 1950.

In Indian River and St. Lucie Counties, Fuller's rose beetle is probably the most serious insect

Florida Agricultural Experiment Stations Journal Series No. 835.

pest known on citrus, and is second only to water injury as the cause of tree decline.

Recently, injury typical of that caused by Fuller's rose beetle has been reported from Pinellas, Polk, Orange and Brevard Counties. No attempt has been made to determine the extent of injury in these counties.

Affected trees have sparse foliage, reduced growth and a reduced root system. They have crops of smallsized fruit and a decreased yield. Many of the roots are girdled near the main trunk. Often when these symptoms occur, the beetle population has practically disappeared. however, tree recovery is slow. Groves affected most seriously have been fifteen or more years old, although injury has been observed on trees of all ages, and on all common varieties. The adult and larva both feed on citrus, but injury to roots by the larva is far more serious than injury to the leaves by the adult.

Description and Life Cycle: The adult, shown in Figure 1, is a greybrown snout beetle about one-third of an inch long. The snout is short and blunt, and the wings are vestigial. According to Smith (3), there are no males, and the females are parthenogenetic.

Eggs are laid in masses of five to more than forty, and are covered with a white, sticky material. They are deposited in cracks in the tree trunk or branches, between leaves and under the calyx of the fruit. Several egg masses are laid during a three to five month period. The individual egg is cylindrical, yellow, and about one-sixteenth of an inch long.

The legless larva, shown in figure 2, is white, distinctly segmented, bean-shape, and measures about one-fourth inch long when fully mature. The negatively phototropic larva moves about freely by crawling much like an angleworm.

Larvae feed on the cortex of lateral roots and may be found at a depth of more than two feet. The feeding injury is canal-like (Figure 3), and is usually on the under side. Large populations often girdle some of the lateral roots. The adult

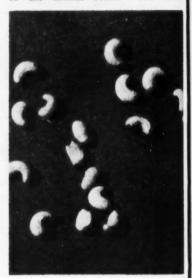


Figure 2. Larvae of Fuller's rose

feeds on a wide variety of plants, but citrus appears to be the preferred (Continued on page 20)

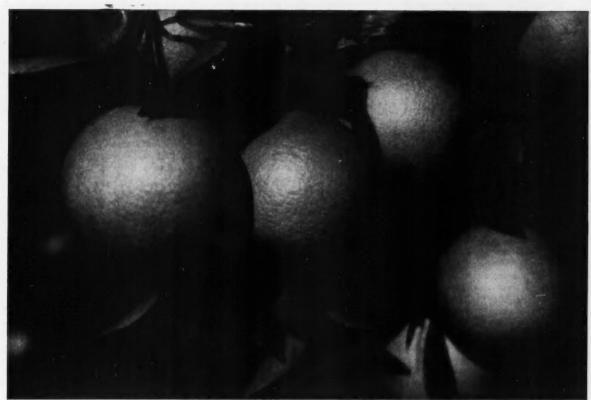
Table 1
Control of adult Fuller's rose beetle with Insecticides applied July 12, 1956.
to Valencia orange trees.

Materials and Amount/1	00 Gallons	Average Number of Beetles Collected On a 3 x 3 Foot Screen at Indicated Intervals After Treatments					
	_	1 week	2 weeks	4 weeks			
Aldrin 21.8% e.c.	1 pt.	0.8	1.2	2.3			
Chlordane 40% w.p.	4 lbs.	0.7	1.2 5.2	2.8			
Dieldrin 15.5% e.c.	1 pt.	0.5	1.3 0.8 3.2	2.3 2.8 0.7 1.0 1.4 2.6 2.5 2.5			
DDT 50% w.p.	3 lbs.	0.0	0.8	1.0			
Heptachlor 11.8% e.c.	1 1/2 pts.	0.3	3.2	1.4			
Lindane 20% e.c.	1 1/2 pts.	0.3	3.3	2.7			
Malathion 57% e.c.	1 1/2 pts.	0.3	3.6	1.6			
Parathion 15% w.p.	2 lbs.	0.5	3.8	2.5			
Toxaphene 40% w.p.	4 lbs.	0.3	3.3	2.6			
Untreated Check		2.3	6.6	2.5			

958 inch

ted, oneure. arva tert a The gure iide. oome

red



This bright, clean fruit resulted from one spraying with Du Pont "Parzate" C.

# NEW! Du Pont PARZATE® C ZINEB FUNGICIDE controls both russeting and greasy spot on oranges and grapefruit

You can control both fruit russeting and greasy spot with new Du Pont "Parzate" C zineb fungicide, a wettable powder especially developed for use in Florida citrus groves. Experimental data and grove tests show that "Parzate" C may be mixed with oil and parathion for reduced spraying costs. "Parzate" C is neutral in action, which means no harmful effect on soil pH, and you reduce equipment wear, too, because there's less material for pumps and nozzles.

For fruit russet control due to rust mites, use "Parzate" C at the rate of one-half to one pound per 100 gallons of water.

Begin spraying when 10% of the leaves are infested with rust mites. For greasy-spot control, use "Parzate" C at the rate of one pound per 100 gallons of water. To get disease-free foliage and higher yields of bright, clean fruit, order new Du Pont "Parzate" C from your dealer today.

On all chemicals, follo a label instructions and warnings carefully.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

PARZATE® C

# Occurrence, Distribution And Control of Fuller's Rose Beetle In Fla. Citrus Groves

(Continued from page 18)

food for the larva. No injury has been observed on the roots of plants other than citrus.

To pupate, the larva moves up near the soil surface and constructs a cell made of soil. Apparently the mature larva secretes a fluid which holds soil particles together.

After emergence, the adults crawl up tree trunks or the stems of weeds and feed on leaves. The feeding injury on citrus foliage is characterized by irregular notches as shown in Figure 4. When large populations are present, the beetles eat the entire leaf, with the exception of the midrib. Under these conditions, eight or more adults may cluster on a single leaf and, after the leaf is consumed, they hang from the midrib in a chain.

Common host plants in groves include tea weed, Sida sp., and Spanish needle, Bidens sp. Beetles have also been observed feeding on guava, Psidium sp., Surinam cherry, Eugenia unifloria (L), Crotalaria sp., Beggar's ticks, Desmodium sp. and vines.

The habits of the Fuller's rose beetle make it difficult to detect them. During their early history they were apparently capable of flight, but have since lost that ability and have adopted the role of obscurity and camouflage. When disturbed, they often move out of

sight or drop to the ground and re-

Life cycle studies are not complete, but observations and counts of various stages collected in the field and in cages at the laboratory indicate that there are two broods annually. Figure 5 presents a diagrammatic sketch of the seasonal history in Florida citrus groves. In California, Dickson (2) reported that the peak of adult emergence occurred in September, with no emergence from January through

The test for control of adults was a replicated field trial in which treatments were applied with a hydraulic sprayer equipped with a double Boyce gun. Treatments were applied to four-tree plots replicated three times, and the spray was directed only to the lower half of each tree and to weeds under the trees.

Beetle populations were estimated by counting the number of beetles that were jarred from the branches onto a 3 by 3 foot plastic-covered

Table 2
Comparison of Insecticides Applied to the Soil on May 1, 1957, for Control of Fuller's rose beetle

1/ Treatments	Number Emergen							Total Found	2/ Percent
	5/20	6/5	6/18	7/10	7/19	7/31	Alive	Dead	Control
Untreated Check	12	12	1	5	0	0	30	6	_
Heptachlor	0	1	0	0	0	0	1	22	96.0
Dieldrin	1	0	0	0	0	0	1	15	92.5
Aldrin	0	4	0	0	0	0	4	18	78.2

1/ Treatments applied at dosage of 5 pounds technical per acre. 2/ Calculated by Abbott's (4) Formula.

June. In Florida, peak emergence occurs in June and September.

Control. In 1950, Dickson (2) reported that 5.0 percent DDT dust, 0.5 percent lindane dust or 50 percent cryolite dust applied to foliage, and sticky tree-banding materials on tree trunks were satisfactory in protecting citrus foliage from attack by adult beetles in California.

In Florida, control studies have been conducted in two ways: first, application of insecticidal sprays to foliage for control of adult beetles and second, application of pesticides to the soil for control of larvae. frame. A different portion of the tree was used for each estimate, but the location with regard to compass direction was consistent for each collection. Results of this test, presented in Table 1, inconclusively indicate that all treatments resulted in initial control, but had no lasting effect.

Beetle counts made two and four weeks after treatments show that the population increased in all plots. From observations made during this test and during life cycle studies, it was found that beetles emerged (Continued on page 26)

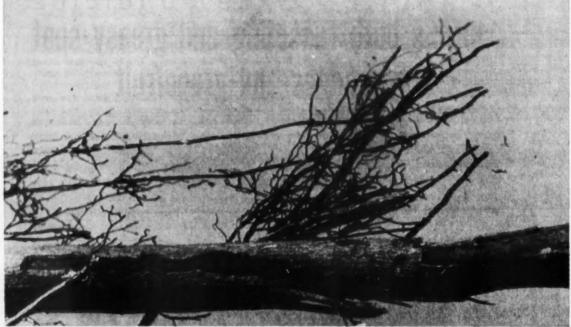


Figure 3, Citrus roots injured by larvae of Fuller's rose beetle.

# SNIVELY GROVES, INC.

WINTER HAVEN, FLORIDA

Growers - Canners - Distributors

of

# FINE FLORIDA CITRUS

Producers Of The

### FAMOUS CYPRESS GARDENS BRAND

Fresh Canned Juices And Sections

Concentrated And Chilled Citrus Sections

Chilled Salad Pack



Don't Miss The Florida Citrus Exposition

. . . Winter Haven . . .

March 7 Thru 14
"A Treat You'll Enjoy"

# The Florida Citrus Exposition

Winter Haven --- March 7 Thru 14

The 1959 Florida Citrus Exposition will be held at Winter Haven from March 7 through March 14. The theme for this year's big all-citrus show will be the Florida citrus industry as viewed "through the eyes of a television camera." Since nearly 50 percent of the Florida Citrus Commission's annual advertising funds are now being spent on television.

With other Exposition officials, President Ben Hill Griffin, Jr., of Frostproof, veteran citrus grower and state legislator, is presently working on negotiations to bring to millions of television viewers across the nation, the Peter Lind Hayes Show, with daily telecasts, direct from the Exposition grounds. The Hayes Show is a popular, variety-type, daytime ABC television network presentation.

One of the new features of the 1959 Florida Citrus Exposition will be a colorful decoration of Nora Mayo Hall in the Florida Citrus Building. This artistic project will be a symbolic picturization of the rematic origin, growth, use and culture of citrus fruits. On twenty wall panels, about 9' x 12', painted murals will depict the history and growth of citrus.

There will be murals of Chinese junks, elephant trains in India, camel caravans in Persia, old sailing ships of Italy and Spain and the modern ocean liners, trucks and streamlined trains . . . all showing the ways citrus fruits have been transported in different countries down through the ages.

On stage in Nora Mayo Hall will be a three dimensional setting with citrus trees and life-size figures depicting the eating and enjoyment of citrus fruits in the royal court of Genghis Khan, the historically famous conqueror of Asia.

Work on this project has been underway since last summer under the supervision of Mrs. Kathleen Coffee Dickinson, art director of the Florida Citrus Exposition.

Through the cooperation of the Winter Haven Chamber of Commerce the Citrus Parade on opening day, March 7, will be one of the largest and most colorful in the history of the Exposition as the gates swing open to celebrate Children's Day.

The Exposition will be closed on

Sunday to re-open on Monday, March 9, for a full week. The highlight of Monday's activities will be the first preliminaries of the 1959 Florida Citrus Queen Contest, when about 25 of the State's most beautiful and talented girls compete for the coveted title and other valuable prizes. The contestants, sponsored by civic clubs, colleges and universities throughout Florida, will compete in evening gowns, swim suits and talent routines on the Lake Silver Amphitheatre stage.

#### Queen Contest

This contest is rated as one of the outstanding beauty contests held annually in the United States. The deadline for entries in this contest is February 15. The new Queen will receive a \$200 monthly retainer fee for one year, plus travelling expenses as she appears in cities about the nation in an effort to publicize and promote the Florida citrus industry.

Tuesday, March 10, will be celebrated as Canner's Day, with citrus canners and processors from throughout Florida gathering for a luncheon at Nora Mayo Hall. The second preliminaries of the Citrus Queen contest will be held on Tuesday night, when the five finalists of the contest will be named.

Wednesday, March 11, will be All-Citrus Day with many organizational activities being planned. That night the glamorous spotlight of state-wide publicity will focus on the Queen contest finals, when the new 1959 Florida Citrus Queen will be named and a colorful coronation held on the Lake Silver Amphitheater stage.

Thursday, March 12, will be Fresh Fruit Day at the Exposition. More than 500 citrus growers, packers and shippers from throughout the State will gather in Winter Haven to enjoy the famous Fruitmen's Dinner, an outdoor barbecue at the Armory.

Agricultural Awards Friday, March 13, has been desig-(Continued on page 24)

IN

Buying a grove?

Selling a crop?

Need money for fertilizer?

WE INVITE CITRUS BUSINESS

The BANK in the HEART of the RIDGE

\* \* \* \* \*

LAKE WALES STATE BANK



With Trust Department LAKE WALES, FLORIDA



# RAINBOW helped condition my trees .. saved them from killing freezes

That's the enthusiastic report of grapefruit grower Henry P. Browder of Arcadia, Florida. "I've been buying fertilizers from International for 20 years," Browder says, "and two years ago I started buying their Rainbow Premium Plant Food. Rainbow increased production and improved the condition of my trees. There is no doubt that Rainbow helped protect my groves from losses during last year's cold weather."

Hundreds of other Florida citrus growers have shared Browder's experience. They know that Rainbow-fed trees are vigorous and healthy, better able to withstand cold weather. Why not get in touch with your Rainbow representative listed below. Let him tell you how Rainbow Premium fertilizer . . . fortified for higher profits with International's exclusive ingredient MEM . . . can improve yield and quality and boost your income.





### PLANT FOOD DIVISION

### INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center - Skokie, Illinois • Plant Locations: Mulberry, Jacksonville, Pensacola, Florida

CONTACT THESE RAINBOW REPRESENTATIVES FOR PROMPT SERVICE:

District Sales Manager

Gallie T. Hackney P. O. Box 942 Ft. Pierce, Fla.

CENTRAL FLORIDA

Thomas H. Collins Rt. 6, Box 622 Tampa 10, Fla.

George W. Hammette 405 W. Robinson St. Orlando, Fla.

W. M. Keen 405 W. Robinson St. Orlando, Fla.

Bryan E. Pennington 2200 St. Joseph Rd. Dade City Fla.

Harold E. Thompon 2931 Walnut, NW Winter Haven, Fla.

Jess V. Smith Wauchula, Fla.

Larry L. McIver

Box 2483

Vero Beach, Fla.

SOUTH FLORIDA

Charles R. Johnson Rt. 2, Box 385 Miami, Fla. Joe C. Pennington P. O. Box 674 Stuart, Fla.

W. T. Rucker, Jr. General Delivery Tice, Fla.

NORTH FLORIDA

Charles E. DeBolt 1602 Rose Ave. Ocala Fla.

Larry Loadholtz Deland, Fla.

P. O. Box 227 Lake City Fla.

George H. Richardson P. O. Box 3072 M.S.S. Tallahassee, Fla.

NORTHWEST FLORIDA

J. C. Beasley P. O. Box 55 Opp, Alabama

S. M. Lufkin, Jr. 102 Ashley St. Atmore, Alabama

Carl S. Bevis Corner of Seminole and Pawnee Madison, Fla.

### THE 1959 FLORIDA CITRUS EXPOSITION

(Continued from page 22)

nated as Agricultural Day and more than 600 men and women from all fields of agriculture are expected to attend a special luncheon at Nora Mayo Hall which is being sponsored by Florida Citrus Mutual. Three nationally important men from the citrus producing areas of California, Texas and Florida, along with young representatives of 4-H clubs and Future Farmers of America will be honored guests at this luncheon.

One of the highlights of the program will be the presentation of an award by Governor LeRoy Collins to Florida's Outstanding Young Farmer of the Year, who will be selected by the Florida Junior Chamber of Commerce. Jaycee clubs throughou. the state select winners in their communities and from this group the state winner is chosen. Outstanding Young Farmers, between 21 and 35, are selected on the basis of their achievements in the field of agriculture. The contest is sponsored by the Florida Jaycees and the Ford Tractor Company.

#### Press Breakfast

Also on Friday the Exposition pays tribute to the State's press, radio and television people. W. E. Rynerson, editor and publisher of the Winter Hamen Daily News-Chief, serving as chairman of the committee in charge of the annual "Press Breakfast" is planning a full evening's entertainment, which will include dinner at Nora Mayo Hall, with music, dancing, presentation of the new Florida Citrus Queen and her maids of honor and humorous short skits lampooning political big-

... Attend The ...
CITRUS EXPOSITION

Then Visit
Winter Haven's First and
Finest Steak House!
... The ...

### SUNDOWN RESTAURANT

And Enjoy
Charcoal Broiled
STEAKS — LOBSTERS
Roast Prime Ribs, Etc.
3rd St. and Ave, K., SW
Winter Haven . . Florida

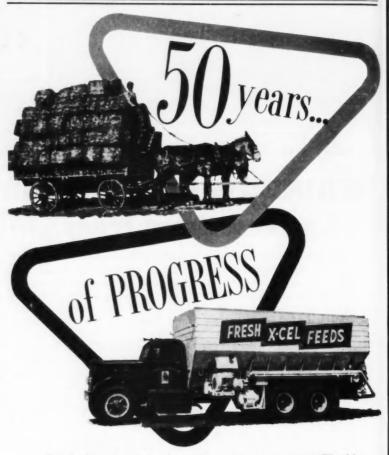
wigs.

Saturday, March 14, will be Processor's Day at the Exposition honoring Florida's citrus processors. During the entire week of the Exposition the James A. Strates Shows will be featured on the Midway.

In commenting on the 1959 Florida Citrus Exposition, President Ben Hill Griffin, Jr., said, "It will be an interesting, revealing and exciting show that everyone in Florida should try to see. The panorama of exhibits as seen through the eyes of

a television camera which will range from the origin of citrus fruits in ancient China down through the ages to the most modern methods of weather forescasting which are untilized to protect the all-important \$600,000,000 citrus industry of Florida."

The Florida Citrus Commission collected over 6 million dollars in excise advertising tax in 1957-58. Members of the Canners Assn., paid over four million dollars of these taxes.



For half-century we have been proud to serve Florida—and to supply you, our customers with feeds, insecticides and fertilizers tailored to your requirements.

Not only are we grateful for the chance to help you with your needs and problems but we promise to continue our efforts to make your work more profitable.

X-Cel products will always be tailored to Florida farming and represents the latest development of proven research. Write us today—your friendly X-Cel man is ready to help you make more money.



1959

in the ods are ort-

ex-

# 80,000

CUBIC FEET OF AIR PER MINUTE



THE HIGHEST LEVEL
OF SPRAYER PERFORMANCE
IN THE WORLD TODAY...

Measured by any standard—judged by any detail—this new Hardie Duo-Fan Model No. DF-40, two-fan sprayer is the greatest and most advanced sprayer ever built. Not only is it a bigger sprayer than ever before available, but each and every part right down to the nozzle tips saves time, labor and cuts maintenance cost to the vanishing point. It simply is bigger and stronger than any spray job.

What other sprayer permits you to adjust nozzles, even change tips, easily and quickly in the field, spray largest trees on BOTH sides of the row and meet the most gruelling tests with more than ample capacity and power? Growers everywhere, regardless of acreage, will thrill to the performance of this great sprayer. It marks the beginning of a new era in pest control. There is a Hardie dealer near you. Ask him for a demonstration. Write for literature.



Hardie Duo-Fan Model DF-248
-Two, 24" axial flow fans.



Hardie Duo-Fan Model DF- 26D -Two, 26" axial flow facs.

Hardie patented two-fan assembly. Two, 40 inch axial flow fans mounted with blades opposed on a single shaft, delivering 80,000 CFM plus. Approximately 30% more air volume than a conventional single 40" fan. Covers more acres per hour than any other make of sprayer.

36 nozzles—18 on each side—for discharge on either or BOTH sides. Each nozzle can be easily and quickly adjusted in the field for any desired spray pattern. Nozzle to

any desired spray pattern. Nozzle tip sizes easily changed in the field

ONLY HARDIE BRINGS YOU THESE

PRICELESS ADVANCEMENTS

Rugged, powerful 501 Cubic Inch Heavy Duty engine designed for long, sustained operation. 50 gallon oversize gasoline tank [runs all day without refilling]. L-P gas engine available at no extra cost.

New, big oil cooler-cuts oil cost.

Long life, oversize, tube and fin radiator gives 15% to 20% more cooling.

Zinc coated steel tank. Lead coated radiator. Stainless steel and special heavy duty ceramic pump parts.

Transmission assembly of tremendous strength. Direct drive to fans.

Fan bearings completely protected, easily lubricated.

Air oscillating attachment easily installed in the field. Small extra cost.

AIRCRAFT TYPE REMOTE CONTROL

Heavy duty construction, simple design, easy to operate. Controls throttle and spray delivery on one or both sides.



MANUFACTURERS OF:

Agricultural Sprayers

High Pressure Pumps

Dusters

Write today for illustrated literature.
Use the coupon.

HARDIE

PEST CONTROL EQUIPMENT

- SOLD AND SILVIELD

The Hardie Mfg. Company, Dept. C division of: Vulcan Iron Works Wilkes-Barre, Pa. Please send me Duo-Fan Sprayer data.

NAME\_\_\_\_\_ADDRESS

CITY\_\_\_\_STATE\_\_\_

Marcl

treate

morit

vive

show

tachle

killin

Chlor fectiv

Re

cate

2.700

a his

larva

is ca

egros.

highe

actus

c11986

were obser

In a

hepta

and

insec the

plied

in o

of t

were

and

ferti

beetl

In

Da

### Occurrence, Distribution And Control of Fuller's Rose Beetle In Fla. Citrus Groves

(Continued from page 20)

over a long period, although data presented in Table 1 indicate that practically all treatments suppressed the beetle population for about two weeks. Experience with DDT and other long-residual chemicals exhibiting a broad insecticide spectrum in citrus groves has been discouraging. In any event, foliage sprays for control of the adult are not very practical

Tests for control of larvae were replicated field trials in which treatments were applied to the soil. Plots were 10 feet by 10 feet, and were located under the canopy of citrus trees. Prior to application, weeds were clipped near the soil surface with a hoe. Granular formulations of insecticides were applied broadcast by hand, and wettable powder formulations were sprayed on the soil with a three-gallon compressed-air sprayer fitted with a hose and TeeJet nozzle.

Evaluation of treatments was based on the number of beetles collected from emergence cages placed over the treated soil. These cages, shown in Figure 6, were 3 feet by 3 feet by 1 foot high, and the tops were covered with 14 mesh screen. After the treatments were applied, a cage was placed in the center of each plot. Beetles were collected from cages at about weekly intervals, and the number of dead and live beetles

was recorded. Plots were replicated 1958. A sour orange seedling was placed in each cage as food for emerging beetles in the 1957 test. The only seedlings that showed signs many of the beetles had been in

Data presented in Table 2 show four times in 1957 and six times in that all treatments used in 1957 not only reduced the emergence of live beetles, but also increased the postemergence mortality. Apparently



Figure 4. Citrus leaves by adult Fuller's rose beetle.

of feeding were in cages over un- the pupal stage at the time of treatbeetles in the 1958 test, small tea weeds, a common host plant for the caged areas.

treated soil. As a food supply for ment, and were not immediately affected by the treatment. beetles may have been killed as the adult, were left undisturbed in a result of coming into contact with the treated soil. Often beetles in

# LIFE CYCLE OF THE FULLERS ROSE WEEVIL PANTOMORUS GODMANI (CROTCH) MONTH JAN FEB MAR APR MAY JUN JUL AUG SEP OCT BROOD B BROOD A

Figure 5. Diagrammatic sketch of the life history of Fuller's rost beetle, at Fort Pierce, Florida

treated plots were observed in a methods greatly reduce the number moribund state, and attempts to revive such beetles were unsuccessful.

Data presented in Table 3 also show that aldrin, dieldrin and heptachlor were effective in 1958 in killing the adults after emergence. Chlordane and thiodan were ineffective at rates used in this test.

Records of beetle emergence indicate that about three beetles emerged per square foot of soil, or about 2,700 per tree. These data indicate a high natural mortality of eggs, larvae or adults, because each adult is capable of laying several hundred eggs and this would indicate a much higher potential population than was actually shown in emergence studies.

In addition to the experiments discussed, several forty acre blocks were treated in various ways and observed during the past two years. In all cases, granulated dieldrin or heptachlor was mixed with fertilizer and applied at five pounds technical insecticide per acre. In some groves, the dieldrin or heptachlor was applied in a single application, while in others two and one-half pounds of technical dieldrin or heptachlor were applied in the fall and two and one-half pounds in the spring fertilizer application. Estimates of beetle populations indicate that both

of emerging adult beetles for a period of more than two years.

The most severe foliage injury has been observed in groves in which weeds were allowed to grow up into overhanging branches. Under these conditions, beetles emerge from the

soil and crawl up the stems of weeds as well as tree trunks and often defoliate the lower branches of the trees. Regular mowing of cover crops and pruning of branches resting on the soil has probably increased control by forcing beetles to crawl on treated soil, and has usually pre-



Figure 6. Emergence cage (36x36x12 inches) for trapping adult Fuller's rose beetle emerging from soil.

# LECO CITRUS HI-LIFTS

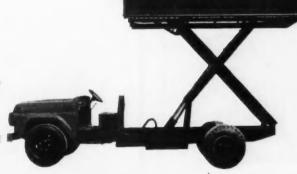
**Built Better To Last Longer** 

Hi Lift Your Harvesting Profits . . . With . . .

LECO

"See Us At The Citrus Exposition"

Built By Florida's Oldest & Largest Hi Lift Manufacturers



### LAKELAND EQUIPMENT CO., Inc.

2240 Highway 92 East

LAKELAND, FLORIDA

vented serious foliage injury. In a few of these groves, shallow cultivation has been practiced, but the value of cultivation appears to be in controlling weeds.

Summary. The occurrence of Fuller's rose beetle in citrus groves in Indian River and St. Lucie Counties was first observed in 1952. Since then, it has been found in large numbers throughout these counties. Injury to citrus roots has recently

by mixing and applying granular formulations with fertilizer. Apparently, a 2.5 pound per acre application made in fall and another in the spring result in a more even distribution of the pesticides than a single application of five pounds per acre. In addition to soil treatment, weed control by frequent mowing, chopping or cultivation, or a combination of these cultural practices, results in better control

Table 3 Comparison of Insecticides Applied to the Soil on April 29, 1958 for Control of Fuller's Bose Beetle

1/ Treatments		Number of Live Beetles Recovered in Emergence Cages on Indicated Dates					Total Found	Total Found	2/ Percent
	5/27	6/6	6/12	6/24	7/7	7/16	Alive	Dead	Control
Untreated Check	6	48	31	15	13	2	115	11	-
Aldrin	0	6	1	4	0	0	11	46	78.9
Dieldrin	- 2	8	6	2	4	0	22 33	73	74.6
Heptachlor	3	12	8	6	4	0	33	36	47.6
Chlordane	9	44	22	35	29	2	141	78	29.5
Thiodan	11	47	17	18	13	0	106	27	12.7

1/ All treatments applied at dosage of 5 pounds technical per acre. Aldrin was sprayed as a wettable powder and all others applied as granular formulation, /2 Calculated by Abbott's (4) Formula.

been reported from several counties in other citrus growing areas of the state. This insect is the most serious pest of citrus in the Indian River area, and is probably second in importance to water injury as the cause of tree or grove decline. Injury to the root system by the larva is far more serious than injury to the foliage by the adult. Apparently, large populations of one or more larvae per square foot and several generations of the insect are prerequisites to tree decline.

Results of experiments and observations presented in this paper indicate that severe root injury can be prevented by soil applications of 2.0 to 5.0 pounds of technical aldrin, dieldrin or heptachlor per acre. Field observations have shown that satisfactory results can be obtained

than where weeds are allowed to

Acknowledgment: Acknowledgement is made to Messrs. C. C. Woolard, Jr. and R. L. Reese, of the Citrus Experiment Station, for their assistance in these studies.

Literature Cited

1. Quayle, H. J. 1938. Insects

of citrus and other subtropical fruits, Comstock Publ. Co., Ithaca, N. Y., pp 200-203.

 Dickson, R. C. Oct. 1950. The Fuller's rose beetle, a pest of citrus.
 Calif. Agr. Expt. Sta. Bull. 718.

3. Smith, F. F. Dec. 1935. An ovipository for Fuller's rose beetle. U.S.D.A. Bureau of Entomology and Plant Quarantine, ET-66.

4. Abbott, W. S. 1925. A method of computing the effectiveness of an insecticide. Journ. Econ. Ent. 18: 265-267.

#### COUNTY COOKOUT

Bartow, Fla.—A new project in outdoor cookery is being introduced to Polk County 4-H Club members in a county cookout, it is reported by Miss Ann Rykard, assistant home demonstration agent. Miss Bonnie B. McDonald, assistant economist in food conservation on the state home demonstration staff, assisted with the plans.

In terms of proportion of income spent for food, U. S. citizens have never eaten so well for so little. A U. S. Dept. of Agriculture analysis of family food expenditures shows that food has never been a better bargain.

### B. C. COOK & SONS

HAINES CITY, FLORIDA

AMONG THE LARGEST CITRUS FRUIT
DISTRIBUTORS IN FLORIDA

MAIN OFFICE

413 North 12th Street

- Haines City, Florida

Phone: HA 2-1121

### **BUYERS OFFICES**

Lakeland	Phone	MU	6-1223
Lake Wales	Phone		2-2161
Orlando	Phone	GA	3-1802
Haines City	Phone	HA	2-1121



HAVEN MILL SUPPLY

Industrial And Grove Supplies 230 Avenue C — SW

Winter Haven
Telephone Cy 3-9695

959

he us.

le. nd

od

of

nt.

in

ne

th

ne

at

n.

### **SMITTY'S SNAPPIN' TURTLE**

P. O. Box 1460

Sanford, Florida

Ph. FA 2-2811



You must see it to believe what it will do

Remote Control Stripping
Makes MO HO the Fastest Tree
Hoe on the Market

PLUS

Non Wrap Cutters Clean Cutting in Any Type of Vegetation

Close Circling

Complete Coverage Stripping, In Any Type Settings

Dependable Low Cost Service Call for a Free Demonstration, and Let Us Prove MO HO is Your Best Tree Hoe BUY!



For Use With or Without Tree Hoe
These Features, Make the AIR FLOW A Must For
Young Trees

DEPENDABLE — Amount of Material Delivered With Accuracy at Any Tractor Speed

EFFICIENT — New Non Clog Design for OR-GANIC as Well as Chemical Material

FAST — Up to Six Trees Per Minute

CONVENIENT — On, Off, and Amount Regulated from Tractor

ECONOMICAL — Material Delivered to Desired Spot Without Loss

BIG — Up to 700 Pounds Capacity
Now You Can Hoe and Fertilize In One
Economical Operation





### N E W 15 ft. Rotary Pasture and Highway Mower

8 Foot Mower Unit Mounted Under Tractor Hydraulically Raised to Any Cutting Height

to Any Cutting Height
7 Foot Mower Unit Mounted Outside Wing Follows Ground Contour, up on Banks, or Down Ditch Beds, and is Easily Raised to Vertical Position for Highway Travel.

New Patented Design Makes It Possible for 35 H. P. Tractor to Handle this Big Mower in Almost Any Vegetation With

Completely Equipped For Field Service

### Citrus Mutual Notes Citrus Consumption

U. S. consumers are setting a new use pattern for all citrus, Robert W. Rutledge, Florida Citrus Mutual general manager, said today.

"The Florida citrus industry has recognized the current consumer trend toward convenience items and has readjusted its marketing procedures accordingly," Rutledge said.

Twenty years ago per capita consumption of citrus, including juice, and seven other fruits and fruit juices was approximately 150 pounds annually with citrus fruits and juices accounting for 40 percent of this total, he said.

On the average, in the last five year period ending with the 1956-57 season, per capita consumption of 10 major fruits, canned and frozen juices (including citrus) had decreased 10 percent, with total citrus consumption showing a four percent increase, Rutledge continued.

"In the last five year period citrus in all forms had 47 percent of the market as compared to 40 percent 20 years earlier," Rutledge said.

The seven major fresh fruits—apples, pears, peaches, bananas, grapes, plum-prunes, and strawberries—on a per capita consumption basis had dropped 26 per cent or 21.7 pounds annually less per person in the 20 year period, he said.

"In that period, fruit juices, not including citrus, showed a net gain of about four pounds per person annually." he said.

"Citrus fruits more than held their own but there was a significant shift to the new use pattern," Rutledge said.

Twenty years ago citrus in fresh form predominated in the diet of the nation's families and 94 percent of the per capita consumption of citrus was in fresh form, Rutledge pointed out.

Today, less than two-thirds of the annual per capita consumption of citrus is in fresh form, Rutledge concluded.

Off-farm income now accounts for about one-third of farmers' total net income, reports the U. S. Department of Agriculture.

This winter marks the 24th year of operation for the Federal State Frost Warning Service, with head-quarters at Lakeland. The service maintains between 400 and 450 survey stations in 11 forecast districts.

# COLLEGE WILL OFFER AGRIBUSINESS COURSE AT SEPTEMBER TERM

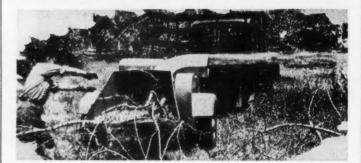
Gainesville, Fla.—The University of Florida College of Agriculture plans to expand the training offered in the field of agricultural business, it has been announced by Dean Marvin A. Brooker.

Beginning in September the department of agricultural economics will have a curriculum in agricultural business management to provide training for those interested in farming, professional farm management, marketing and processing, farm supply, federal and state regulatory agencies, farm magazines, farm organizations and many others.

A related curriculm was introduced in the fall of 1958. It was designed especially for students interested in fresh fruit marketing and packinghouse management,

"The new curriculum will have from 20 to 25 hours of electives, enabling the student either to broaden his training or to specialize in his chosen area of interest," says Dr. Brooker.

### ASPLUNDH BRUSH CHIPPERS



### ARE MORE ECONOMICAL

And safer to use, and give you a cleaner and faster method of removing brush and pruned limbs. In view of the cleaning up job which is going to have to be done in most citrus groves over the state very soon, you will find the ASPLUNDH CHIPPER the Fastest and by far the most Economical means of handling the job.

#### CITRUS HAULING AND LOADING COSTS

You can chip brush and dead limbs right where they are located, letting the chips fall to the ground where they will help mulch the soil. If you wish to haul the chips away they will cut your hauling costs 75 percent as 1 truck load of chips equals at least 4 truck loads of brush or limbs.

#### ELIMINATES BRUSH BURNING

Using the ASPLUNDH CHIPPER also eliminates the necessity of stacking and burning brush or dead limbs, with the consequent saving of labor costs.

We will be glad to provide a

FREE DEMONSTRATION AT YOUR GROVE

For further details and information write

### DELL W. FARRENS EQUIPMENT COMPANY

P. O. Box 95

JACKSONVILLE, FLORIDA

959

ent, up-

ory

ro-

788

ernd

ve

enen his

### ON DISPLAY AT THE FLORIDA CITRUS EXPOSITION



### CITRUS HOE AND BANKER

ESPECIALLY DESIGNED FOR THE CITRUS INDUSTRY

### SEE THESE MONEY SAVERS AT THE FORD DISPLAY



### EXCLUSIVE WATER RINGING ATTACHMENT

These Maguire Citrus Units are the result of years of research and development. Now with one basic attachment you can have a power hoe and a power banker by merely interchanging the attachments to the basic unit!

Owners report actual savings of 10 cents per tree with the Maguire Power Hoe attachment... plus an average of 1200 trees hoed each day.

Both units raise and lower with finger-tip ease from your tractor! V-Belt driven for smooth safe operation. Interchangeable with most models of FORD Tractors, plus Fordson Major Diesels and many other makes!

### ARRANGE FOR YOUR FREE DEMONSTRATION TODAY

AT YOUR LOCAL



TRACTOR and IMPLEMENT DEALER



### **CHECK THESE FEATURES:**

MAGUIRE POWER HOE ATTACHMENTS

• Pulverizes and aerates soil • Patented Anti-Wrapping device • Follows full contour of

earth • Cuts full 48" • Employs tractor's Hydraulic System • 22 Tine-Blades 41/4" apart on 2" Rotor Shaft

#### MAGUIRE POWER BANKER ATTACHMENT

- Interchangeable with power hoe in minutes
- May be used to ring trees for water
   Low-low maintenance costs
   Thoroughly tested and proven in Florida groves

It

ya

as

an

do

co

It

ty

# Pounds Tractor Co. Opens New Branch

Donald E. Pounds of Pounds Tractor Co., Winter Haven, announces the opening of a branch of his firm at 102 North Rest Avenue, Avon Park, where they will display a complete



DONALD E. POUNDS

line of J. I. Case farm equipment, farm machinery and parts.

This addition to the Pounds firm will be under the direction of C. C.



C. C. "SONNY" PEEBLES

"Sonny" Peebles, who has been associated with the firm for several years past.

Peebles is married to the former Betty McKown of Winter Haven. They have two sons, Charles, 8, and Tony, 7, and reside in Winter Haven.

Mr. Pounds stated that a cordial

### Florida Citrus Mutual Notes

By John Sikes

When Bob Rutledge, Florida Citrus Mutual's general manager who's so citrus-conditioned he must often feel that Florida's dowry for her marriage to Sunshine was paid in oranges, grapefruit and tangerines, recently broached the subject of sloganeering or symbolic device in citrus advertising he empahsized he wasn't being original.

"Slogans, symbols and terse sales expressions are as old as advertising itself," Rutledge said. "What many in the industry would like to see is the application of these triedand-true promotional devices to our own citrus advertising programs."

What Rutledge has in mind is for somebody to come up with an apt and catchy slogan or symbol that, intelligently pitched, would come to be instantly associated in the mind of the consumer with Florida citrus.

invitation is extended to everyone to visit their new branch during open house week.

Still claiming no originality, he suggests something like "Have You Had It Today?" as a sales-phrase to stir the folks' desire to hustle over to the fruit counter and frozen foods cabinet to stock up on Vitamin C-packed Florida citrus and citrus products. (If you keep up your needed inventory of this important vitamin you must stock up on it every day; your body doesn't store it up.)

Rutledge, obviously, is up on his research, especially in leafing through old periodicals to brush up on his knowledge of the advertising gimmicks of a generation or more ago.

Don't Miss
THE
CITRUS EXPOSITION
Winter Haven
March 7-14
SOUTHERN PIPE &
SUPPLY
Winter Haven, Fla.

# Why Grove Men

rely on . . .

### FLORIDA FAVORITE FERTILIZER

From rewarding experience, citrus growers have learned to rely on FLORIDA FAV-ORITE FERTILIZER . . . because its special formula meets their specific needs and soil requirements. It's the fertilizer that proves it's different . . . through more productive grove results!

Why not get the best — FLORIDA FAV-ORITE FERTILIZER! It costs no more! And "on the spot" grove delivery, coordinated with fast-spreading requirements, saves you time . . . saves you money!

### COMPLETE FIELD SERVICE

- CITRUS GROVES
- FIELD CROPS
- PASTURE GRASS
- TRUCK FARMS

florida favorite fertilizer

H. MUTUAL 2-1291 - P.O. BOX 912 - LAKELAND. FLA



### DAMAGE TO CITRUS BY FLUORINE AIR POLLU-TION IN CENTRAL FLA.

(Continued from page 16)

moss samples for Fluorine analysis. It was found that the Fluorine 400 yards from the plant ran as high as 9400 P.P.M. in the moss, and the amount of Fluorine decreased as the distance from the plant increased down to 100 P.P.M. This surely does indicate that the Fluorine is coming from the phosphate plants.

The area of Fluorine coverage from these phosphate plants is large. It is not only in Western Polk County, but it covers most of the central part of Hillsborough County. There are no less than eleven plants and mills in Polk County capable of releasing large amounts of Fluorine or Fluorides. There are also no less than three plants in Hillsborough County. Because of the North Easterly and South Easterly winds, most of the pollution drifts Westward.

This gives Hillsborough County probably the largest share of the Fluorine.

What relief is in the future? We Citrus Growers believe most phosphate plants are willing to do a good clean-up job, but they are re-

### Florida Citrus Commission Notes

The Florida Citrus Commission has joined with 12 National fresh fruit and vegetable organizations in a giant move to give added sales and merchandising push to fresh produce in the nation's food stores.

During the United Fresh Fruit and Vegetable convention in Dallas in February, director of advertising and merchandising Frank D. Arn of the Commission presented the Florida citrus advertising and merchandising program to the Convention and called on the national groups for cooperative action for stimulating

luctant to do so until all the plants have the desire to go along. There is much pressure at present for the State Government to push the clean-up with air pollution regulations. In time plastic and inert compounds made from Fluorine may be so valuable, that phosphate operators cannot afford to waste it by dumping it into the air or streams.

#### Literature Cited

Wander, I. W., McBride, J. J. Jr., "A Chlorosis Produced By Fluorine on Citrus in Florida", Florida State Hort. Soc. Proc. October 1956. sagging sales of fresh products.

"Since Florida citrus is such an important part of the fresh fruit department in stores, we want to bring to all retail and wholesale factors our advertising and merchandising program and solicit their cooperation which in turn will result in greater sales and profits for all concerned," Arn said.

It was another step in the Commission's plan to bolster fresh Florida orange sales which have been declining for the past 10 years. Homer E. Hooks, Commission General Manager noted recently that Florida shipped 30,000,000 boxes of oranges fresh during 1951-52, but this season's volume will probably be the lowest in 26 years with estimated shipments of less than 15,000,000 boxes going to the fresh fruit trade.

Improved plastics will almost certainly play an important role in the science wonder-world of tomorrow. Chemists at the U. S. Department of Agriculture have discovered that animal fats — largely a surplus product today — can be used to convert hard, brittle plastics into premanently soft, flexible, tough materials that will process into many durable, high-quality products.

### CITRUS AND CHEMICAL BANK OF BARTOW

A Progressive Bank For Productive Polk County



Ray Clements \_\_\_\_ Chairman of The Board

Ben Hill Griffin, Jr., \_\_\_\_ President

J. E. Stell \_\_\_\_ Executive Vice President

W. O. Gibson, Sr., \_\_\_\_ Vice President

W. H. Greene, III, \_\_\_\_ Cashier

Broadway at Main - Bartow, Florida



### **Citrus Tree Movement Down**

Movement of citrus trees from Florida nurseries to Florida destinations was the lightest since the 1951-52 season during the period of July 1. 1957 to June 30, 1958. This season ranked tenth in total number of trees moved and was slightly less than half the number of trees moved last season. The series of low temperatures during this season affected some trees in nurseries to the extent that they could not be moved during the period. The movement was 106 percent of the 1928-56 average and 77 percent of the 1950-57 average.

Citrus tree movement was reported by Florida nurserymen to the Nursery Inspector of the Florida State Plant Board, Gainesville, by mailing copies of invoices when shipping to their destinations. Personnel of the Department of Agricultural Experiment Stations, Gainesville, assembled these data for Florida destinations over the 30-year period from the invoices in the files of the Florida State Plant Board. Copies of the latest report as Agri-



ZACH SAVAGE
AGRICULTURAL ECONOMIST
AGRICULTURAL EXPERIMENT
STATION

cultural Economics Mimeo Report 59-5 are available from this Department which show movement of trees by kinds and seasons for 30 years, together with the 1957-58 movement by variety and county of destination. Included also is the percentage distribution by kind of rootstock and scion variety for the 1957-58 season.

Sixty-two percent of the total movement during the 30 seasons was in the 14 seasons when in excess of a million trees were moved each season. Forty-four percent of the movement was during the past nine seasons of 1949-58. The average annual movement during the 30 seasons of 1928-58 was 1,060,907 trees.

Using an average of 65 trees set per acre, there were enough trees moved during the 30 seasons to set 489,649 acres. Seasons varied from an equivalent acreage of 8,119 in 1934-35 to 33,770 in 1956-57. The average was 16,322 acres annually.

Eighty-three percent of the 1957-58 movement was orange trees -

(Continued on page 36)

MOVEMENT OF CITRUS TREES FROM FLORIDA NURSERIES TO FLORIDA DESTINATIONS

MOVEMENT	OF CITACS THEF				3 TO FLO	KIDA DES	TINATION	· g •
		8-56		50-55	_	1956-57		1957-58
Kind of Citrus	Average	Percent	Average	Percent		Percent	Trees	Percent
	*****			All	Citrus			
Oranges	672,014	65.9	954,504	67.3	1,882,459	85.8	855,495	78.9
Temple	49,697	4.9	67,836	4.8	86,463	3.9	47.445	4.4
Grapefruit	174,799	17.1	206,166	14.6	53,054	2.4	37,357	3.4
Tangerines	16,879	1.7	18,887	1.3	16,539	0.8	12,118	1.1
Other Mandarines	29,905	2.9	45,136	3.2	55,148	2.5	51,292	4.7
Limes	35,658	3.5	47,390	3.4	17,769	0.8	21,387	2.0
Lemons	11,056	1.1	23,051	1.6	31,845	1.4	18,736	1.7
Tangelos	12,348	1.2	31,818	2.2	39,216	1.8	32,604	
Other Citrus	17,169	1.7	22,758	1.6	12,542	0,6	9,027	3.0
Total	1,019,525	100.0	1,417,546	100.0	2,195,035	100.0	1,085,461	0.8
Total	-,,						1,000,401	100.0
	291,382	40.3	539.117	anges - 1	ncluding Te	mple		
Valencia	100,784	14.0	215,584	52.7	995,273	50.5	399,811	44.3
Pineapple	109,651	15.2	53,279	21.1	381,059	19.3	186,948	20.7
Hamlin	20,225	2.8	37,886	5.2	379,417	19.3	187,454	20.8
Navels	47,922	6.6	50,212	3.7	44,621	2.3	9,388	1.0
Parson Brown			67.836	4.9	33,444	1.7	30,464	3.4
Temple	49,697	6.9		6.6	86,463	4.4	47,445	5.3
Lue Gim Gong	28,086	3.9	14,906	1.5	13,427	.7	22,836	2.5
Pope Summer	12,092	1.7	14,875	1.5	3,163	.2	2,050	0.2
Other Oranges	61,872	8.6	28,645	2.8	32,055	1.6	16,544	1.8
Total	721,711	100.0	1,022,340	100.0	1,968,922	100.0	902,940	100.0
				Gra	pefruit			
Marsh Seedless	53,150	30.4	31,506	15.3	19,253	36.3	20,975	56.2
Thompson	40,400	23.1	52,525	25.5	4.122	7.8	1,935	5.2
Foster	3,776	2.2	2,785	1.3	4,949	9.3	2,206	5.9
Other Red and Pink	32,665	18.7	103,801	50.3	17.692	33.4	7,175	19.2
Duncan	14,765	8.4	10,075	4.9	6,056	11.4	3,339	8.9
Conners Prolific	4.099	2.3	341	0.2	3		3	
Walters	558	0.3	3		24	**	5	**
McCarty	2,199	1.3	178	0.1	32	0.1	10	
Excelsion	4,357	2.5	678	0.3	8	**	2	
Davis Seedless	383	0.2	380	0.2	169	0.3	186	0.5
Other Grapefruit	18,447	10.6	3.894	1.9	746	1.4	1.521	4.1
Total	174,799	100.0	206,166	100.0	53,054	100.0	37,357	100.0
Total					Limes	20010	01,001	100.0
	23,141	64.9	36,292	76.6	14,911	83.9	5.541	25.9
Persian	1,674	4.7	242	0.5	14,511	83.3	5,541	
Idemor	10.843	30.4	10.856	22.9	2,858	16.1	15.846	
Other Limes	35,658	100.0	47,390	100.0	17,769	100.0		74.1
Total	35,558	100.0	41,330			100.0	21,387	100.0
			200		mons			
Villafranca	341	3.1	591	2.6	2,040	6.4	5,083	27.1
Perrine	2,569	23.2	7	**	6	**	_	_
Meyer	2,498	22.6	5,810	25.2	9,943	31.2	4,444	23.7
Ponderosa	499	4.5	1,196	5.2	943	3.0	702	3.8
Other Lemons	5,149	46.6	15,447	67.0	18,913	59.4	8,507	45.4
Total	11,056	100.0	23,051	100.0	31,845	100.0	18,736	100.0

<sup>•</sup> Fiscal Year of July 1 through June 30 •• Less than 0.05 percent

### WELCOME!

TO IMPERIAL POLK COUNTY

LEADER IN

CITRUS CATTLE PHOSPHATE

A wonderful county in which to Live, Work and Play



**BOARD OF COUNTY COMMISSIONERS** 

Julian C. Durrance, Chairman; Roy P. Gladney, Aldine Combee, Eugene A. Laurent, J. B. Thornhill, Jr.

DON'T MISS THE FLORIDA CITRUS EXPOSITION At Winter Haven, March 7-14

### CITRUS TREE MOVEMENT DOWN

(Continued from page 34)

Temple included - as compared to 71 percent for the 28 seasons of 1928-56 and 72 percent for the 5-year average of 1950-55. Grape-fruit trees made up 3 percent of the 1957-58 movement, 17 percent for average and 15 percent for the 1950-55 period. Orange, grapefruit, and tangerines constituted 88 percent of the total movement in 1957-58, 90 percent for average, and 88 percent during 1950-55. The remaining trees were lime, lemon, tangelo and other citrus.

#### Orange Trees

Late orange varieties constituted half or more of the orange tree movement - Temple included - in 11 of the 30 seasons. These seasons were 10 of the 11 most recent seasons, 1947-58. Just under 50 percent of the 1957-58 movement of orange trees was late varieties. Of the three groups of orange varieties - early, midseason, and late late varieties led in 25 of the 30 seasons, which included the 20 most recent seasons, 1938-58. Early varieties led in the three seasons of 1935-38, and midseason led in 1929-30 and 1933-34.

There were 17 seasons when late varieties made up in excess of 40 percent of orange varieties. During the 1949-58 period, late varieties made up 55 percent of the orange tree movement and 46 percent for the 28 seasons. Valencia was the chief orange variety over the period, Hamlin second, Pineapple a close third, Temple fourth, and Parson Brown fifth. In 1957-58 the order by variety was Valencia, Hamlin, Pineapple, Temple, Parson Brown and Navels.

Movement of midseason orange varieties - Temple included - was second in importance with 29 percent of the orange tree movement in 1957-58, 34 percent in 1950-55 and 32 percent for the 28 seasons. The three leading varieties of this group were Pineapple, Temple and Navels.

The movement of early varieties made up 24 percent of all orange trees in 1957-58, 10 percent of 1950-55 and 22 percent for the 28 seasons. The early group consisted chiefly of Hamlin and Parson Brown with the former variety averaging more than twice the latter. Early varieties have been decreasing in importance of nursery stock movement since 1945-46. Hamlin movement exceeded Parson Brown dur-

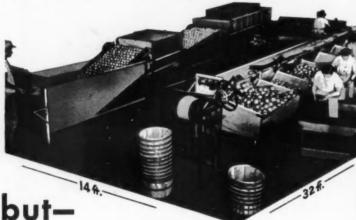
ing the past five seasons and averaged 229 percent of the Parson Brown movement during the 28 seasons. In 1957-58 the Hamlin movement was 615 percent of Parson Brown.

In 1957-58 the movement of all orange trees - Temple included - was the seventh largest of the 30 seasons, 237 percent of average and 193 percent of 1950-55. The movement into Polk County was 234,819 trees in 1957-58 or 26 percent of the total orange tree movement. During each of the four seasons of 1951-55, Orange County led. Orange County was second in 1957-58 with 16 percent, Lake third with 11 percent, Highlands fourth with 9 percent, and Hillsborough fifth with

Twenty-seven percent of the early orange varieties were moved into Orange County with 47,040 trees, and stood first. Polk was second, Lake third, Hillsborough fourth, Pasco fifth, and Volusia sixth. Eighty-one percent of these varieties went into these six counties. Lake and Volusia received more early orange trees than midseason or late varieties.

Twenty-three percent of midseason varieties were moved into Orange County, with 49,052 trees and stood first. Polk was second, Highlands





### it does a MAN-SIZE JOB

Down go costs and up go profits when the fmc Junior Unit line of equipment goes to work for gift pack shippers. Every unit in the Junior Line has all the design and construction features of larger commercial packing house equipment.

See This Amazing Packing House In Operation At The Citrus Exposition, Winter Haven, Florida, March 7-14.





FOOD MACHINERY
AND CHEMICAL CORPORATION

FLORIDA DIVISION . LAKELAND, FLORIDA

third, Lake fourth, Hardee fifth, and Hillsborough sixth. Eighty-nine percent of these varieties went into these six counties. Orange, Hardee and Seminole received more midseason varieties than early or late.

Thirty-two percent of the late varieties were moved into Polk County, with 129,680 trees and stood first. Orange was second, Highlands third, Hillsborough fourth, Saint Lucie fifth and Lake sixth. Seventy-two percent of late varieties went into these six counties. Slightly over 50 percent or 427,923 trees were late and these varieties led in movement into 12 of the top 20 counties.

Valencia trees led all orange varieties in each of the past eight seasons and constituted 44 percent of the movement in 1957-58. Hamlin was second at 21 percent, Pineapple third at 21 percent, Temple fourth at 5 percent, Parson Brown fifth at 3 percent and Lue Gim Gong sixth at 3 percent. These six varieties made up 97 percent of the orange tree movement. Some other varieties in order of movement were all Navels, Queen and Glen Summer.

#### Tangerine Trees

Tangerine tree movement in 1957-58 at 12,118 trees was the lowest movement since 1952-53. The 1957-58 movement was 64 percent of the 5-year average and 72 percent of the 28-year average. Lake led in 1957-58 with 6,126 trees or 51 percent. Orange second, Osceola third, Highlands fourth, Hillsborough fifth and Polk sixth. Seventy-nine precent of the tangerine tree movement was into these six counties. Murcott Honey or Smith tangerine movement - not included in the above figures - amounted to 41,083 trees in Florida in 1957-58. This was an increase of 7 percent over the previ-

### Grapefruit Trees

For the third successive season, the grapefruit tree movement set a new low. There were 37,357 trees moved this season which was 21 percent of average and 18 percent of the annual movement during 1950-55. For the first time in 13 seasons, the movement of Marsh Seedless trees exceeded red and pink varieties. Marsh movement at 20,975 trees made up 56 percent of total grapefruit. Red and pink varieties with 11,316 trees were second and made up 30 percent of the total.

Polk county received more grapefruit trees than any other county in 1957-58 with 20 percent of the

# NOW! Frost Protection with fmc TROPIC BREEZE WIND MACHINES

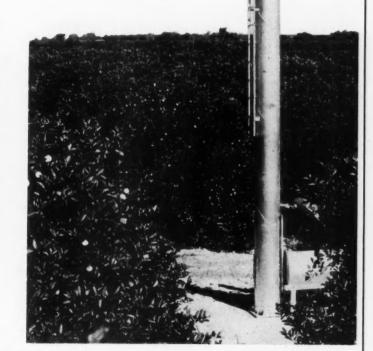
Tropic Breeze wind machines offer quick frost protection, over a wide area, in a matter of minutes. Just start the motor and your crop is under protection. One man can supervise entire operation.

Thousands of machines in use in the West; now available to Florida for the first time from a local manufacturer. Service and parts immediately available.

Developed by a company with over 20 years' experience in frost proctection, Tropic Breeze wind machines provide superior positive results for only pennies per acre per hour of operation.

The first Florida installations have already proven their worth on at least two occasions. Satisfied customers confidently face any future frosts without worry.

Phone or Write





Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Florida Division

General Sales Office – LAKELAND, FLORIDA Plants: LAKELAND, FLORIDA – WOODSTOCK, VIRGINIA movement. Saint Lucie second, Indian River third, Highlands fourth, Pinellas fifth, Orange sixth and Pasco seventh. Seventy-four percent of the movement was into three counties of the Indian River section - Indian River, Saint Lucie, and Brevard. All major citrus counties received more orange than grape-fruit trees. For the State as a whole, there were 24 orange trees moved to each grapefruit tree.

#### Lemon Trees

The movement of lemon trees in 1957-58 at 18,736 ranked eighth in these records. This amount was 30 percent of the movement during 1954-55. The Villafranca variety led in movement at 5,083 trees or 27 percent of the movement in 1957-58. Other important varieties were Meyer and Avon. Twenty-nine percent of the lemon movement was into Hillsborough County at 5,505 trees. Sarasota was second, Polk third, Lake fourth and Orange fifth. Eighty-one percent of the movement was into these five counties.

#### Lime Trees

The movement of lime trees at 21,387 in 1957-58 was the second lowest since 1950-51. This movement in 1957-58 was 114 percent of that for lemon trees. Bearss lime trees made up 68 percent of the movement. Highlands County led by receiving 69 percent of these trees. Dade was second with 4,674 trees. Ninety-one percent of the movement was into these two counties.

#### Tangelo Trees

Tangelo tree movement in 1957-58 with 32,604 trees was fifth in the season of these records. The Orlando remained the chief variety moved at 79 percent. Orange County received the most trees at 22 percent of the total moved. Lake was second, Polk third, Hillsborough fourth, Seminole fifth, Manatee sixth and Highlands seventh. Seventy-one percent of the movement was into these seven counties.

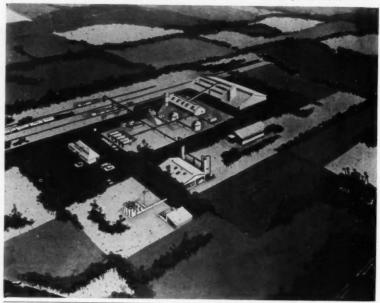
# New Chemical Company To Serve Florida Agriculture

Flerida Nitrogen Company, a new chemical industry to serve Florida agriculture and industry, announced plans at the annual dinner of the Greater Tampa Chamber of Commerce of 100 to begin construction immediately on a multi-million dollar plant near Tampa.

William C. MacInnes, who was

elected chairman of the Committee of 100, announced the location of the plant in Tampa and Mr. George V. Taylor, President of Florida Nitrogen Company, discussed the details of the new industry.

Mr. Taylor said that the company will begin construction on a \$3 million plant in Tampa. This original plant will include facilities to produce solid 20.5% lime nitrate and a full line of nitrogen solutions for agriculture and industry. At the same time, construction will begin on a plant to produce nitric acid. Plans also call for the completion of an ammonia plant at some later date. This three stage plan of development will call for a total investment of about \$7 million.



#### **OUR CONGRATULATIONS**

... To The ...

# CITRUS INDUSTRY MAGAZINE

On Its 40th Anniversary

and to the

# FLORIDA CITRUS EXPOSITION

On Its Magnificent Show Each Year

We take pride, also, in suggesting that every citizen in Polk County can find the most complete banking service at our bank...

## FLORIDA NATIONAL BANK

AT BARTOW

One of 28 Banks in the Florida National Group

Member Federal Deposit Insurance Corporation

# The Citrus Industry Advertising Pays Dividends!

Read what Sam H. Killebrew has to say about it.



Spred-O-Matie

Sam Killebrew, Inc.

Manufacturers and Distributors

Phone WOodlawn 7-1871 — P. O. Box 1068 — Auburndale, Florida

Mr. S. Lloyd Frisbie The Citrus Industry Magazine Bartow, Florida

Dear Mr. Frisbie:

A few short years ago, when this company was formed, we instituted a system of long-range planning. Naturally, part of that planning included a desire to advertise our products in media best suited for us.

As you know, we selected The Citrus Industry and have consistently advertised in it since the start of our business. The results of this advertising have proven to be most worth-while and we have been gratified with the results.

At this time, we would like to extend hearty congratulations to you and the members of your staff on the hOth anniversary of The Citrus Industry Magazine.

Cordially,

SAM KILLEBREW, INC.

illebru

Sam Killsbrew,

President

# Four Years Of Experiments With

# New Miticides And Insecticides

Since 1954 we have tried out 13 new materials for control of citrus red mites, (purple mites), citrus rust mites and purple scales,

Most of the work was done in the Norman G. Platts grove of Temple orange trees near Fort Pierce, where copper, zinc, and manganese are always used in the postbloom spray. and usually also parathion and wettable sulfur. There the red mites and purple scales are quite a problem. The timing of the experimental sprays followed the cooperative spray schedule, the first spraying being the postbloom and the second the summer, usually in July. With the most effective combinations no other applications were needed, but in 1955 and 1956 the grove was dusted with sulfur for rust mites late in the fall

In all experiments the new miticides or insecticides were compared with each other and with a standard control recommended in the spray schedule. For red mites this was either oil emulsion at % or 1½ gallons, ovex 50WP at 1 pound, or HERBERT SPENCER AND
ALLEN G. SELHIME
ENTOMOLOGY RESEARCH DIV.,
AGRICULTURAL RESEARCH SERVICE, USDA, ORLANDO

Kelthane, Chipman R-6199, and Chipman R-6200, and the period of protection against reinfestation exceeded that from the materials currently recommended in the spray schedule. Immediate control was also had with malathion, Guthion, and Chlorobenzilate, but the period of protection was shorter. Tedion was slow in immediate control, but long lasting in effect. Zineb and maneb did not control red mites.

For rust mites Chlorobenzilate, Trithion, zineb, maneb, Chipman R-6199, and R-6200 were equal to or better than wettable sulfur. This is important, because we now have several materials than can be substituted for wettable sulfur for rust

Four materials gave control of both red and rust mites. These were Chlorobenzilate, Trithion, Chipman R-6199, and R-6200. The last two materials also gave complete control of purple scales and whiteflies, but these highly toxic materials are not available for grower use because of hazard to workers. Trithion and Chlorobenzilete have been cleared for use on citrus.

Year-round control of scales, red mites, and rust mites was obtained with two combination sprays - the first at postbloom and the second in July. Postbloom combinations deserving more extensive trials are:

- Oil emulsion 1¼ gal. Scales and red mites
- Zineb 1 lb. Rust mites
  2. Oil emulsion 1¼ gal. Scales, red mites
  Chlorobenzilate (25WP) ½ lb.
  —Rust mites
- Oil emulsion 1¼ gal. Red mites
   Malathion (25WP) 2 lb. Scales
   Zineb 1 lb. Rust mites
- Parathion (15WP) 1 lb. —
   Scales
   Chlorobenzilate (25WP) 1 lb.
   Red mites, rust mites
- Malathion (25WP) 2 lb. —
   Scales, red mites
   Chlorobenzilate (25WP) 1 lb.
   Red mites, rust mites
- Oil emulsion 1¼ gal. Scales, red mites
   Trithion (25WP) 1 lb. — Red mites, rust mites
- Parathion (15WP) 1 lb. Scales Trithion (25WP) 1 lb. — Red mites, rust mites

These seven combinations are possible substitutes for the parathion (Continued on page 43)

New Miticides Compared with Standards for Control of Citrus Red Mites and Rust Mites.

	Red Mites		Rust Mites	
Miticide (quantity per 100 gal.)	Immediate Kill	Prolonged Control	Immediate Kill	Prolonged Control
Thimet (48.5EC) 1 qt. Chlorobenzilate (25WP) 1 lb.	Equal Equal	Better	Better	Better
Hercules AC-528 (25EC) 1 qt	Equal	Equal		-
Malathion (25WP) 2 lb. Demeton (26.2EC) 1 pt.	Poorer Better	Poorer Better	No control	
Trithion (25WP) 1 lb. Kelthane (25WP) 2 lb.	Equal Equal	Better Better	Equal	Equal
Guthion (24EC) 1 qt.	Poorer No control	Poorer No control	Better	Better
Zineb (65WP) 1 lb. Maneb (70WP) 1 lb.	Ne control	No control	Better	Better
Chipman R-6199 (71WP) 1/4 lb. Chipman R-6200 (75WP) 1/4 lb. Tedion (25WP) 1 lb.		Better Better Better	Better Better No control	Better Better No contro

Aramite 45WP at 2/3 pound per 100 gallons of spray. For rust mites it was wettable sulfur 5 pounds per 100 gallons. Results of these comparisons are tabulated below, the conclusions being based on immediate control and the time before reinfestation.

At different times during the four years these miticides were combined with the scalicides oil emulsion, parathion, and malathion and supplements basic copper sulfate, neutral zinc, and neutral manganese, and were found to be compatible. The materials and combinations were safe for the trees.

Excellent immediate control of red mites was obtained with Thimet, Hercules AC-528, demeton, Trithion,

mites, and these are compatible with oil emulsion. A no-sulfur spray program is now possible. Tedion and malathion did not control rust mites.



#### THE LITTLE STROKE

(Continued from Page 7)

as was previously thought, but from rupture of capillaries derived from the main arterial lumen." Hughes and Parker (11) reported on the basis of their postmortem examination of persons who died from the little stroke, that in every examined case, the softened brain tissue was found in the areas of the broken capillaries and arterioles.

What takes place in the brain in the case of high blood pressure? Dr. I. M. Scheinker, of the Cornell Medical School (12) gives the answer. "The early stage is characterized by increased cellularity (permeability) of the small capillaries . . . The vascular changes are confined to capillaries and small arterioles . . . Only the small blood vesses are involved in the pathologic process. The transient nature of some of the neurologic symptoms might best be explained by the smallness of the cerebral lesions." This means that when there is a very small bleeding from one or two brain capillaries, and if the bleeding is arrested at once, the injury to the brain is so slight, that no symptoms might be present. That is exactly the case of some little stroke incidents, when the patients experience a temporary loss of speech or paralysis of arms or legs, from which they might recover in a matter of minutes. Yet these apparently insignificant incidents indicate that the capillary system of their brain is effected, that they have what we call increased capillary fragility.

#### CAPILLARY FRAGILITY

Increased capillary fragility is a common phenomenon, much more frequent than has previously been Griffith et al (13): recognized. Beardwood et al (14); Rodriguez and Root (15); Greenblatt (16) and others reported an incidence of increased capillary fragility ranging from 20 up to 78 per cent among groups of individuals examined by Mueller (17), Davis (18) and others, using capillary miscroscopy, found that increased capillary fragility was most common among patients affected with chronic diseases such as arteriosclerosis, hypertension, rheumatoid arthritis Hypertension is often and diabetes. associated with capillary fragility. It was estimated by the investigators that about one half of the persons affected with high blood pressure have an increased fragility of the capillaries; 54 per cent according to Beaser et al (19). Diabetics also tend to show capillary fragility frequently. According to Beaser et al (19), 54 per cent of diabetics manifest this condition. The same investigators found that 100 per cent of hypertensive diabetics are affected with capillary fragility of various degrees of gravity. Perry and Linder (20) disclosed that increased capillary fragility is particularly high among older people.

Sokoloff et al (21) investigated capillary resistance in 189 patients, ranging in age from 53 to 88 years and found increased capillary fragility, as manifested by the negative pressure test in the appearance of from 5 to 40 petechiae, in 134. All hypertensive patients in this group were affected with capillary impairment.

# CITRUS BIO-FLAVONOIDS IN CAPILLARY INJURY

It is generally recognized that citrus bio-flavonoids, alone or combined with ascorbic acid, are beneficial in conditions where capillary bleeding or increased capillary fragility are present. Numerous medical and scientific papers were published during the last decade, concerning the therapeutic value of citrus bio-flavonoids in capillary injury. It was pointed out that these compounds prevent and arrest capil-

lary bleeding, minimize bruises, and improve functioning of the capillary system in general. Their usefulness was demonstrated by clinical trials in radiation erythema (22, 23); retinitis (24); bleeding duodenal ulcer (25); bleeding cystitis (26); epistaxis (nose bleeding) (27); erythroblastosis (28, 29); tuberculous hemoptysis (30); habitual abortion (31); periodontal diseases (32); labyrinthitis (33); and in increased capillary fragility of older people (21, 34).

### CITRUS BIO-FLAVONOIDS IN LITTLE STROKE

During the last five years, a clinical investigation was initiated by the Southern Bio-Research Institute on the usefulness of citrus bioflavonoids in little stroke. In these trials, a group of New York and Chicago physicians took part. The clinical study on little stroke offers many difficulties, for the patients should be observed for a period of four-five years, and the data so obtained must be compared with the control groups of patients who have not received the medication. The data so far collected concerns mostly the patients in old-age homes. The preparation used in this clinical study contained citrus bio-flavonoids, isolated and purified from citrus

We Are Proud of the Part We Play In

THE CITRUS CENTER OF THE WORLD



# EXCHANGE NATIONAL BANK

OF WINTER HAVEN

WITH TRUST DEPARTMENT

Member F. D. I. C.

SEE YOU AT THE EXPOSITION

molasses, and produced by Pasco Packing Company of Dade City. One capsule of this preparation contained 100 milligrams of citrus bioflavonoids. The daily dose was two capsules per day, given without any interruption. Only the patients who had had one, two or more incidents of little stroke were selected for these trials, either for the control group, or for the flavonoid therapy. Up to now, about 200 cases were collected. Two preliminary reports concerning these clinical studies were published: one, in the Journal of the American Geriatrics Society, Valume 5, March 1957; and another in Clinical Medicine, Volume 6, February 1959. It might take another year before these studies will be completed. The data so far collected, and which should be taken with some reservation, indicates the beneficial effect of citrus bio-flavonoids on preventing the recurrence of little stroke incidents. In the treated, flavonoid group, only 5% of the patients had strokes and there were no fatal cases. In the control group, there were 49% little stroke incidents with 14% casualty.

POSSIBLE USEFULNESS OF CITRUS FRUIT IN LITTLE STROKE

No clinical study on the effect of citrus fruit and juice in little stroke has been conducted so far. Such a research project could only be initiated by the citrus industry itself. Thus the beneficial effect of a diet rich in citrus fruit and juice on the course of little stroke, may be evaluated only speculatively on the basis of our knowledge of the bio-flavonoid content of citrus fruit and juice. Both citrus peel and juice contain a considerable amount of bio-flavonoids, meaning the flavonoids which are biologically active. This content is changing, depending on the maturity of the fruit. According to the investigations conducted at this Institute, a mature Valencia orange has, as an average, about 40-50 milligrams of biologically active flavonoids. The figures for a medium size mature grapefruit are slightly less, and average of 35-40 milligrams. A large size glass of orange juice, 250 cc, yields from 45 up to 65 milligrams of active flavonoids, depending on the harvesting season and the type of fruit. The clinical investigation conducted with the purified bioflavonoids, as described above, indicate that a daily dose of 200 milligrams of these substances appears to be sufficient for preventing the little stroke incidents. Thus one may estimate that six large glasses

of orange juice, or altogether 1500 cc of orange juice, consumed per day, might be quite helpful to those who are affected with little stroke. Yet, once more we may stress the fact that these figures are calculated on a purely theoretical basis, and that only clinical trials with citrus fruit or juice in little stroke might confirm this estimation.

#### REFERENCES

(1) Alvarez, W. C., J.A.M.A., 157:1190, 1955. (2) Menkin, Valy. Biochemical Mehcanisms in Inflammation, Charles Thomas, 1956, (3) Magoun, H. W., Grune & Stratton, New York, p. 15, 1955. (4) Wolff, Harold G., Grune & Stratton, New York, p. 21, 1955. (5) Published by the American Heart Association, Grune & Stratton, 1955. (6) Barr, David P., Grune & Stratton, New York, pp. 71-81, 1955. (7) Westfall, K. and Barr, R., Deutsche Arch, Klin, Med., 151:1, 1928. (8) Stern, K., J. Neurol. & Psychiat., 1:26, 1938. (9) Scheinker, I. M., Arch. Neurol. & Psychiat., 54:395, 1945. (10) Paterson, J. G., Canad. M.A.J., 44:114, 1941. (11) Hughes, E. G., and Parker, M. W., J.A.M.A., 155:96, 1954. (12) Scheinker, I. M., Grune & Stratton, pp. 68-9, 1955. (13) Griffith, J.Q., Jr.; Krewson, C. F., and Naghiki, J., Mack Publishing Company, pp. 67-95, 1955. (14) Beardwood, J. T.; Roberts, E., and Trueman, R.: Proc. Am. Diabetes A., 8:243, 1948. (15) Rodriguez, N. and Root, H.: New England J. Med., 238:391, 1944, (16) Green-

blatt, R. B.: Obst. & Gynec., 2:530, 1953. (17) Mueller, O.: F. Enke, 2 vols. 1937 and 1939. (18) Davis. Eli: Am. J. M. Sc., 212:192, 1946. (19) Beaser, S. B.; Ruby, A., and Seligman, A. M.: Arch. Int. Med., 73:18, 1944. (20) Perry, D. J. and Linder, L .: Science Newsletter, April 1953. (21) Sokoloff, Boris, Martin, William Coda and Saelhof, Clarence C .: J. Am. Geriatrics Soc., V:3, 1957. (22) Arons, I.; Freeman, J., and Weintraub, S.: Brit. J. Radiol., 27:696, 1954. (23) Martin, W. P.: Proc. Meeting, Buffalo Gen. Hosp., May 1952. (24) Loewe, W. R.: Eye, Ear, Nose & Throat Monthly, 34: 108, 1955. (25) Weiss, S.; Weiss, J., and Weiss, B.: Am. Gastroenterol., 24:112, 1955. (26) Saelhof, C. C.: Am. J. Dig. Dis., 22:204, 1955. (27) Scal, J. C.: Eye, Ear, Nose & Throat Monthly, 35:246, 1955. (28) Rogers, G. C., and Fleming, J. M.: West J. Surg., 63:386, 1955. (29) Jacobs, W. M.: Surg., Gynec. & Obst., 102: 233, 1956. (30) Jones, L. W., and Croce, P.: FSC Monograph, pp. 19-21, 1952. (31) Taylor, F. A.: West. Surg., 64:280, 1956. (32)Wellensiek, E. K.: Texas Dental J., 74:289, 1956. (33) Miller, Theodore R., Eye, Ear, Nose & Throat Monthly, 37:601-603, 1958. (34) Martin, W. C.: Internat. Rec. & Gen. Pract. Clin., 168:66, 1955.

Home demonstration women in Sarasota country are intensely interested in craft work.

# **Nearly Everyone Reads**

# The Winter Haven Daily NEWS-CHIEF

To keep informed as to the latest news happenings of local, state, national and international interest.

As the center of many of the major activities of Florida's great citrus industry, you will find this fine daily newspaper a source of up-to-the-minute information about the industry.

Be Sure and Visit The Citrus Exposition

# The Winter Haven News-Chief

Winter Haven, Florida

#### Four Years Experiments With New Miticides and Insecticides

(Continued from page 40)

plus wettable sulfur plus ovex (or Aramite or demeton) now in the spray schedule, Basic copper sulfur, nutritional zinc, and nutritional manganese may be added for varieties needing such supplements.

For the summer spray, late in June or early in July, the following combinations have been found satisfactory or are suggested by these experiments:

- 1. Malathion (25WP) 2 lb. -Scales, red mites Trithion (25WP) 1 lb. - Rust mites
- 2. Malathion (25WP) 2 lb. -Scales, red mites Zineb 1 or ½ lb. — Rust mites
- 3. Malathion (25WP) 2 lb. --Scales, red mites Kelthane (25WP) 2 lb. - Red mites
- 4. Malathion (25WP) 2 lb. -Scales, red mites Hercules AC-528 (25EC) 1 qt. - Red mites
- 5. Oil emulsion 1/2 gal. Red mites, scales Trithion (25WP) 1/2 lb. --Red mites, rust mites
- 6. Oil emulsion ½ gal. Red mites, scales

Chlorobenzilate (25WP) 1 or ½ lb. — Red mites, rust mites Nos. 1 and 2 are perhaps the most

dependable, because they controlled all three insects. Nos. 3 and 4 could be depended upon to control scales and red mites, but might fail with rust mites, although in the experiments rust mites gave no trouble after their use. Nos. 5 and 6 would be most useful on later varieties such as Valencias, although with the oil reduced to 1/2 gallon and applied not later than July the effect on maturity and sweetness would not be marked. It might fail, though, in controlling heavy fall scale infestations, and therefore needs further testing. Malathion or parathion with the Chlorobenzilate would probably be better than oil emulsion in sum-

It is possible to substitute 1 pound of parathion 15WP for the malathion in the first four summer formulas, but the saving in cost might well be offset by trouble in control of red mites or soft scales late in the fall and by increases in parathion residues at harvest. Parathion used in the summer often results in heavy outbreaks of red mites in September or October. Malathion did not increase red mites, but helped to control them.

# **Exposition Highlights**

More people than ever before will have an opportunity to attend the industry-sponsored 1959 Florida Citrus Exposition this year.

Ben Hill Griffin, Jr., President of the Florida Citrus Exposition, announced admission prices are being lowered in order to allow more people to attend. The new schedule is \$.50 for adults and \$.25 children.

"This," Griffin said, "will enable many persons, especially the working people, to come back more than one time to see the various activities which are presented during the Exposition Week."

The Florida Citrus Exposition will

We think that our success in obtaining control through the year with only two sprayings, using these new combinations, is due to thorough coverage to the drip point. extra gallon or so used on each tree gave such control that a third spraying was not needed. Apparently the scales and mites must be hit and covered well to get kill with these new sprays. Increasing the amounts of materials per 100 gallons cannot offset a poor spray job, which sometimes makes extra sprayings necessary in commercial practice.

be held March 7 to March 14, with new activities scheduled each day. The theme for this year's big show will be the citrus industry as viewed "through the eyes of a television camera."

Florida's outstanding young farmer of the year will be honored here on March 13, during an awards presentation to be led by Governor LeRoy Collins.

The presentation will be one of the highlights of the Florida Citrus Mutual Agricultural Day Luncheon at the 35th annual Citrus Exposition which opens here on March 7.

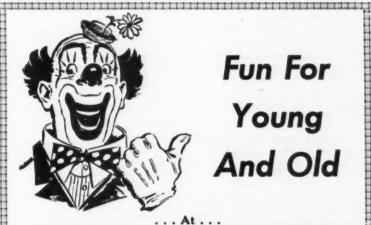
Ben Hill Griffin, Jr., Florida Citrus Exposition President, said Florida's Governor will be one of the honored guests at this annual event agricultural Florida's honoring

More than 600 men and women will be on hand for the luncheon.

Governor Collins will make the official presentation to the outstanding young farmer who will be selected by the Florida Jaycees.

From the individual community selections will come the state winner.

Outstanding Young Farmers are selected on the basis of their achievements. Selections are limited to young men between 21 and 35 who are in agriculture.



Fun For Young And Old

The Florida Citrus Exposition March 7-14th Winter Haven . . . Featuring The . . .

JAMES B. STRATES RAILROAD SHOW

> One of America's Largest And Popular Carnival Entertainments PLAYING AMERICA'S LARGEST CITIES YEAR ROUND

# The LYONIZER

COMPILED BY THE LYONS FERTILIZER COMPANY

# Reports Of Our Field Men . . .

#### HIGHLANDS AND POLK COUNTIES

R. E. Lassiter, Jr., P. O. Box 1304 Winter Haven, Fla.

Our Spring fertilizer application is in full swing at this time. Young tree fertilization should begin around the last of February or the first of March.

With the record-breaking warm weather which we are having, our trees are growing early and quite a lot of bloom is being noticed. We have not found too much wood damage from the cold weather experienced in January, except on the most tender growth. However, there was quite a loss of foliage in some places. In the colder locations there was some fruit damage from the cold.

Growers should be on the lookout for scale and mite populations and should be planning to control these insects with their post-bloom sprays. On those trees that have been de-foliated from the cold, it would be well to apply a complete nutritional spray. Post bloom sprays should be applied after twothirds of the petals have fallen from the blossoms.

#### HILLSBOROUGH PASCO AND SUMTER COUNTIES

C. W. Dean Gibsonton, Fia. Phone Tampa 40-2592

Weather has been nice for the last two weeks. We are hoping for a nice rain as the good Florida sunshine has dried the ground out somewhat.

Fertilizing in my territory is in full swing now. Growers are applying their top dresser.

From all indications we are going to have a heavy bloom this year. On some groves I have seen, the blooms are awfully heavy in comparison to those same groves last year. Growers are hoping for a good crop of fruit, as they think the prices of next season will be as good as they have been, and are this season.

I'm hoping that you growers that haven't tried the good ole Lyons Fertilizer will try some this year.

#### SOUTH POLK, HIGHLANDS, HARDEE AND DeSOTO COUNTIES

C. R. Wingfield Phone: Glandale 2-8181 Avon Park, Fla.

Good moisture conditions and warm weather has put the citrus tree to work and by middle of February we found them ready to put forth a new growth and bloom. This put the growers in high gear to get the top dresser application applied to aid in the setting of a new crop. At this time it looks like it will be a good bloom, but too early to say much about the set. Generally the tree looks like it is in a very good condition for the new crop.

The midseason fruit is moving into market and process channels at a rapid rate. The prices are still good and there has been a lot of activity in the buying of the Valencia crop.

The young trees that were banked for the Winter should have already had the banks pulled down and an application of fertilizer should be put on to aid the new growth. These young trees should be fed at regular intervals during the Summer with a well balanced fertilizer.

Vegetable and watermelon growers are busy with their crops and with these good warm days you can almost see them grow.

#### NORTH CENTRAL FLORIDA L. D. Geiger, Jr., Phone STATE 7-3952 Leesburg, Fla.

Mid February in North Central Florida finds the citrus growers in this area very busy. There is a lot of activity also in the harvesting of the crop. This is also a busy time as many growers are getting on the fertilizer and some are doing some spraying.

The trees are beginning to bud

The trees are beginning to bud out and in most groves where the flower buds are pushing it looks as if there will be a good crop depending on how the conditions are to set the bloom.

The pastures are beginning to green up which makes the cattlemen very happy.

### NORTH CENTRAL FLORIDA

V. E. Bourland Winter Garden, Fla. Phone 107

We are having some wonderful Spring weather, and trees are starting a good growth with bloom, it looks now as though there will be a heavy bloom.

Most growers would welcome a good rain. Fruit is still moving at a rapid pace, some fruit on young Valencia trees is being moved with mid season fruit that is too sweet. All groves are looking good, being worked and top dressing applied, quite a bit of spraying has been done for the post bloom, more smoot and scale is prevalent at this time than any other year I remember.

Some young trees are being unbanked, but majority will wait until the full moon this month. Young trees are being replaced in skips, and cold hurt groves, and some new acreage being set.

Melon growers are very busy getting seed and plants growing. Truck farmers are cutting some cabbage, and setting their Spring crops.

#### SOUTH HILLSBOROUGH, MANA-TEE AND SARASOTA COUNTIES

# Eaves Allison P. O. Box 365, Sarasota, Fla. Phone Fulton 8-2611

Looks like a good bloom this year, its coming on both the old and new growth. Also a lot of new growth showing up. Citrus trees damaged by cold these past two winters are recovering themselves with a great deal more vigor. Spring application of that good Lyons fertilizer will help set a big and profitable new crop.

Vegetable farmers have perked up considerably during the past week of fine weather and warm growing nights. As this is written — Feb. 17th — tomatoes squash, cabbage, melons and such like are shining down their rows like new buttons.

With all the assistance we get from the Citrus Commission, our State Experiment Stations, and our Weather Bureau, problems are no longer the hazard they used to be. All it takes now is good management, good weather, good luck, and that Good Lyons Fertilizer!

#### ADVERTISEMENT - LYONS FERTILIZER COMPANY



# Uncle Bill Says:

Personally we ain't never had no yen to git into politics . . . 'n the more we see of politics, the better we like bein' in the business of producin' good citrus fruit.

They is a lot of mighty fine men holdin' political office, 'n a lot of 'em seem to like their jobs, but somehow or other we jist can't picture ourself of likin' to be accused of everything under the sun, or submitted to all this pressure which is stacked up on officeholders to do something fer their constitutients . . . unquestionably they is a lot of things politicians is asked to do that is entirely justified, then again they is other things that nobody . . . not even the smartest politician is asked to do . . . that could possibly be done.

Fer instance, we all growl about the heavy taxes we have to pay, and we fuss at our legislators fer not cutin' our taxes, while in almost the same breath we're askin' 'em to provide more money — a lot more money — fer some of our favorite projects. The two things jist don't equalize so the poor politician can't possibly satisfy everyone.

Now, on the other hand, us citrus and vegetable growers sometimes think we have sort of rough times, but a big portion of the time the size and quality of our crops is dependent to a large extent upon the sort of treatment we give our crops. We got to feed 'em enough of the right kind of plant food, we got to keep 'em free from pests and we got to cultivate 'em properly and do a lot of other things to help raise the sort of crops the prospective buyer wants and is willin' to pay a good price fer.

So between the two jobs we'll leave the business of politics to the politicians and we'll stick to our farmin', which incidentally is bein' made more effective every year by new methods and new materials.

'nother thing is that when we need sound advice our Experiment Station is willing, able and ready to help us, while Lyons Field Service Men are also always ready and able to be of service, without obligation, to their customers.

Florida's citrus fruit continues to git better and better, with all the help available to us. Yep, we like farmin' better 'n politics!

### FRUIT THEFTS LESS day, the 23rd. THIS YEAR THAN LAST

this season than anticipated despite paid in January by Mutual. current favorable citrus prices, Dale Grower Relations Division said Mon- more numerous," Carlton said.

Carlton reports that only two \$100 rewards for apprehension of fruit thefts have been paid so far this Florida fruit thefts have been fewer month. He said two rewards were

"Usually when fruit is selling for Carlton, director Florida Citrus Mutual such favorable prices fruit thefts are

## Within the past six years Mutual has paid out a total of approximately

tor's March meeting.

\$6,000 in rewards for its efforts to curtail citrus thefts.

He said three claims have come in for rewards since the February meet-

ing of Mutual's board of directors.

These will be brought up at the direc-

Law enforcement agencies throughout the citrus belt have reported Mutual's efforts to curtail fruit thefts have been a major reason for the recent decrease in thefts this season.

#### THE CITRUS INDUSTRY

Published By ASSOCIATED PUBLICATIONS CORPORATION Bartow, Florida

S. Lloyd Frisbie Editor

George Stevens Advertising Manager

#### . . . . . . . . LIST OF ADVERTISERS IN THIS ISSUE

Armour Fertilizer Works	11
California Spray Chemical Corporation	15
Citrus & Chemical Bank of Bartow	33
B. C. Cook & Sons	28
E. I. DuPont Company	19
Exchange National Bank of Winter Haven	41
Dell W. Farrens Equipment Company	30
Flag Sulphur & Chemical Company	16
Florida Favorite Fertilizer	32
Florida National Bank At Bartow	38
Food Machinery & Chemical Corp. — Wind Machines	
Food Machinery & Chemical Corp. — Junior Packinghouse Unit	36
Geigy Chemical Corporation	17
Hardie Manufacturing Company	25
Haven Mill Supply	28
Ideal Fertilizer Company	14
International Minerals & Chemical Corp. — Plant Food	
International Minerals & Chemical Corp. — Potash Division	13
Jackson Grain Company	24
Sam H. Killebrew, Inc,	2
Lakeland Equipment Company	27
	22
Lyons Fertilizer Company 44, 45,	48
Maguire Citrus Units	
Pounds Motor Company	8
Polk County Board of County Commissioners	35
Rhom & Hass Company	- 4
Smitty's Snappin' Turtle	29
Snively Groves, Inc.	21
Southern Dolomite Company	10
Southern Nitrogen Company	40
Southern Pipe & Supply	32
James B. Strates Shows	43
Sundown Restaurant	24
Swift & Company	- 6
Superior Fertilizer & Chemical Company	47
Winter Haven News-Chief	42

# EXPERIENCED FERTILIZER SALESMAN

Leading Hillsborough County Manufacturer requires experienced fertilizer salesman for Polk County area. Knowledge of citrus essential. College degree desirable but not mandatory. Salary open. Car furnished. Bonus and pension plan.

Furnish full details to Box 120 c/o THE CITRUS INDUSTRY, BARTOW, FLORIDA

# Classified Ads

SUPERIOR CITRUS TREES-Grown on virgin land, certified nematode-free. Adequately protected by wind machines for assured delivery. Most varieties available for late Spring and June planting. psorosis-free and xy Registered psorosis-free and xyloporosis-free stock available for Fall 1959. Will bud registered stock on order for 1960 delivery. For further informa-tion and quotations call GLendale 2-7541 or write, WARD'S NUR-2-7541 or write, WARD'S NUR-SERY, INC., Box 846, Avon Park.

EXPERIENCED MAN to top work 20 acres of 15 year old pineapple trees to Navel oranges. Advise basis of charges including cutting back old

FLOYD L. WRAY P. O. Box 1782—Ft. Lauderdale, Fla.

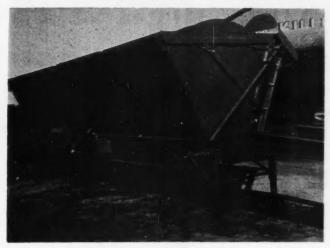
CITRUS SEED: New crop of sour orange, rough lemon, cleopatra mandarin and sweet seed seed now available. seedling orange Write for prices stating amount wanted. Fruit scarce. Suggest placing order immediately as supply limited, Ward's Nursery, Inc., Box 846, Avon Park, Fla.

EXCELLENT 3/4 inch Valencia and Pineaaple Trees on rough lemon Inspection certificate each sale. Call Dick Durden, at Frontier 5-2891, Bowling Green, or Owen Bissett at CYpress 3-1337, Winter Haven.

FOR SALE ..— ..20 ft. FMC Parker Citrus Sizer. Excellent condition. Midway Groves, \$500.00. Inc., Route 2, Box 288, Sarasota, Fla.

Completely reconditioned GROVE TRACTOR . . . like d. \$1500. new! Fully guaranteed. \$1500. Call or write POUNDS TRACTOR COMPANY, Winter Haven. Phone CYpress 3-3159.

LEAF ANALYSIS: Analysis for nitrogen, phosphorus, potassium, calcium, maguesium, boron, manganese, iron, copper, zinc and molybdemum . . \$15. Write for details to Dr. Wolf's Agric. Labs. 2620 Taylor St., Hollywood, Florida.



The Hydraulic

# BULK HAULER

The Answer To All Bulk
Material Transport Problems
Serving All Growers and the
Fertilizer Industry

\*Patent Applied For

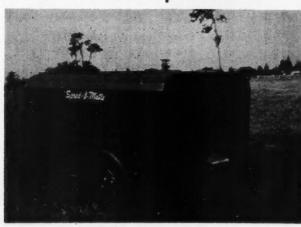
# SAM KILLEBREW, INC.



See You At The Florida Citrus Exposition

Spred-O-Matie

The Bulk Distributor
Built In Florida For All
Growers Will Distribute
All Materials Under
Any Conditions



\*Copyrighted

BOTH SAND LAND AND BEDDED GROVE MACHINES

--- USED MACHINES AVAILABLE ---

# Greater Emphasis Than Ever Is Today Being Placed On Diet....

In nearly every magazine one reads these days articles appear telling the readers how they may improve their health and appearance through proper diet . . . and millions of people are today following various diets.

# FLORIDA GROWERS HAVE KNOWN FOR YEARS . . .

The need for proper diet for their trees and vegetable crops . . . with the result that vast research has been made into the health-producing qualities of diets in the form of improvements in fertilizers being used.

# LYONS FERTILIZERS TODAY REPRESENT MOST EFFECTIVE FOOD INGREDIENTS . . .

For the crops of our customers . . . with the result that more and more of Florida's leading growers are using our Fertilizers to improve their crops.

Our Field Service Men are always ready to be of service to you without obligation.

# **Lyons Fertilizer**

Phone 43-101
TAMPA FLORID

LYONS
FERTILIZERS
Produce
MAXIMUM
CROPS
Of
FINEST

Fine

Cit

USI

Pro

Suj

Ci